

THE SUGAR MANUFACTURERS' ASSOCIATION
(of Jamaica)
LIMITED

ANNUAL REPORT

OF THE

RESEARCH DEPARTMENT

1954



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THE SUGAR MANUFACTURERS' ASSOCIATION (of Jamaica) LIMITED

RESEARCH DEPARTMENT

ANNUAL REPORT, 1954

A. INTRODUCTION AND SUMMARY

1. The Director paid a visit to the United Kingdom during the period 20th April to 4th June, 1954. He interviewed a number of candidates to fill the posts of Agronomists.

Mr. C. E. M. Smith was on overseas leave in the United Kingdom during the period 14th July to 27th September, 1954.

Mr. P. D. Manser of Birmingham University and Mr. R. J. Stephens of Reading University joined the staff as Agronomists on the 15th July, 1954.

The Director attended an emergency meeting of the B.W.I. Central Sugar Cane Breeding Station Advisory Committee in Barbados in August.

Mr. T. Chinloy paid a visit to Hawaii, and attended a seminar on the nutrition of sugar cane held under the auspices of the Hawaiian Sugar Planters' Association. He presented a paper on "Some Experiences with Crop Control of Sugar Cane in Jamaica," by R. F. Innes and T. Chinloy.

Mr. T. Chinloy attended meetings of the Advisory Committee of the B.W.I. Central Sugar Cane Breeding Station, the B.W.I. Sugar Cane Investigation Committee and the Advisory Committee of the B.W.I. Sugar Research Scheme held in Trinidad in November, 1954.

Mr. T. Chinloy attended the B.W.I. Sugar Technologists' Association Conference held in Trinidad in November, 1954. He presented a paper, "An Introductory Discussion on the Application of the Evaporation Concept to the Water Requirements of Plants and the Control of Irrigation in Sugar Cane Agriculture," by I. R. Cowan.

2. For the 1954 crop a total of 3,503,788 tons of cane were ground. This is equivalent to 367,659 tons 96° sugar computed at the island average of 9.53 tons cane per ton 96° sugar. Of this total, estates produced 2,123,692 tons cane or 61%. A total of 2,121,577 tons cane were reported as being reaped from 62,494 acres at an average of 33.95 tons cane per acre.

3. With the exception of Green Park, which became a cane farmer soon after the beginning of their crop, cane yield survey returns were made by all estates for the 1954 crop. Nearly all estates have complied with the request for making returns of tons pol made and tons 96° sugar based on 97% pol extraction and 100 Boiling House Efficiency.

4. Productivity rate increased over the previous year. Calculated on 97% pol extraction and 100 B.H.E., the rate of productivity was 6.03 cwt. sugar per acre per month, representing a 3% increase over the figure for the previous year. This is believed to be largely due to favourable growing seasons and the increased acreages reaped of the newer, improved varieties, B41227, B42231 and B4362. Worthy Park again headed the list with the remarkable figure of 8.27 cwt. sugar per acre per month. Barnett, Caymanas, Frome, Holland, Jamaica Sugar Estates, Monymusk, New Yarmouth and Sevens all produced sugar at a rate in excess of 6.0 cwt. per acre per month.

5. The increasing popularity of B41227, B42231 and B4362 is reflected by the fact that nearly twice the acreage of these varieties was reaped for the 1954 crop compared with the 1953 crop. Of the plant acreage reaped for the 1954 crop, these three varieties occupied 64% of the area, compared with 40% during the previous year.

6. To implement the expansion programme of the activities of the Research Department, two Agronomists have been appointed. One has been stationed at Caymanas and will be in charge of the experimental work at Jamaica Sugar Estates, Serge Island, Gray's Inn Central, Caymanas, Bernard Lodge, Innswood, United Estates and Worthy Park. The other is in Montego Bay and his area includes Frome, Barnett, Rose Hall, Hampden, Long Pond, Vale Royal and Richmond-Llandovery.

7. The laboratory continued to carry out the routine analysis of soil and leaves, as well as the analysis of juices from experiments. Sugar samples taken from bulk shipments were also analysed.

8. The analysis of leaves taken for the trace element survey was completed. The data indicate that there are suspicions of manganese and zinc deficiencies in some areas.

9. The flame photometer which was installed during the last part of 1953 has proved to be a very valuable instrument. It has brought about a considerable saving of time and money for potash determinations.

10. The method of using the cane sawdust to assess the pol of cane samples has proved satisfactory, and will be continued for the 1955 crop.

11. A 10% sample of all fields were examined for borer percentage. The figures have been analysed and presented in a paper to the Jamaican Association of Sugar Technologists. The overall island figure of 3.4% is fairly satisfactory. Fall plants are more heavily attacked than other classes and B37161 and B4362 appear to be more severely infested than the other commercially grown canes.

12. An investigation was carried out to see if there was any relationship between borer intensity and juice quality. The results show that for every 1% borer infestation there was an attendant drop of 0.23% in juice quality.

13. Irrigation experiments are under way at Monymusk, Richmond-Llandoverly and Caymanas to assess the water requirements of cane by evapotranspiration methods. The experiment at Caymanas has been designed to compare the yields obtained by using overhead and surface irrigation systems.

14. Investigations into the effect of organo-mercurials on the preservation of cane setts have indicated that under certain conditions of inadequate soil preparation due to unfavourable weather conditions, germination of cane setts treated with organo-mercurials is distinctly better than that of cane setts not so treated. It is proposed to examine this aspect more fully during the coming crop.

15. Fertilizer consumption for the 1954 crop was similar to that for the 1955 crop. The actual amounts used were 2,020 tons nitrogen equivalent to 9,619 tons sulphate of ammonia (21% N), 66 tons phosphate equivalent to 366 tons superphosphate (18% P_2O_5), and 990 tons potash equivalent to 1,650 tons muriate of potash (60% K_2O). Nitrogenous fertilizers were applied to 94% of the area reaped in 1954 at an average rate of the equivalent of 3.68 cwt. sulphate of ammonia (21% N) per acre; 9% of the area received the equivalent of $1\frac{1}{2}$ cwt. of 18% superphosphate and 42% received potash at a rate equivalent to 1.4 cwt. 60% muriate of potash per acre.

16. Fertilizer experiments remained, as they undoubtedly always will, the references to which all fertilizer advisory services were based. Nearly eighty such experiments were reaped for the crop under review. These included trials to determine the differential effects, if any, of fertilizers on varieties.

17. Preliminary experiments were carried out to assess the herbicidal effects of various chemicals. A more intensive study of this will be conducted during the coming crop, and in order to obtain a clearer understanding of the problem, a weed survey will be carried out.

18. The outbreak of West Indian Cane Fly (*Saccharosydne saccharivora*) at Caymanas was more severe than in 1953. Mr. D. G. Ashby, Entomologist of Pest Control, Ltd., England, visited the island to advise on the possibility of control by means of insecticides. It appears that spraying at specific times with DDT gives a good measure of control. At the same time, control by biological means was attempted by the

introduction of *Cyrtorhinus* from Hawaii and *Dryinid* from Trinidad.

19. In keeping with the policy laid out, greater attention is being focussed on cultural practices, and more intensive work is being carried out to investigate land form, the desirability of ratoon cultivation, different systems of drainage and spacing between rows. Several trials have also been laid out to assess the value of bagasse as a soil ameliorant.

20. A new approach is being tried to help in fertilizer advisory work. Instead of laying out a formal trial on one field, each trial will be split up into its component blocks, and each block placed on a separate field. It is believed that this approach will give a broader base for nutritional advice.

21. Monymusk are conducting a series of experiments to compare aqueous ammonia and sulphate of ammonia. The designs of these trials were made by the Department and the trials will be carried out on plants and ratoons on heavy and light soils.

22. Prior to embarking on a project to assess the nutritive value of ammoniated molasses, the material was fed to cattle in two different localities. Some of the animals tended to become very excitable when they consumed the treated molasses and the investigations have been held in abeyance pending the findings of Dr. L. F. Wiggins, who is analysing samples of the material.

23. During the year under review, importation of different varieties of cane were made from canes bred in Barbados, British Guiana, Cuba, Hawaii, India, Mauritius, Puerto Rico and Queensland.

24. Selections from the 1st 500 have now reached the stage of large scale trials to be compared with standard varieties. Up to the present, B41227, B42231 and B4362 continue to perform well in the sixty variety experiments reaped during 1954.

25. The erection of a pre-fabricated aluminium-framed greenhouse was completed. This will facilitate the production of sugar cane seedlings and provide room for pot culture work.

26. Experiments have been laid out to determine the effect on yield of ratoon stunting and chlorotic streak. The chlorotic streak experiments have been designed to evaluate the effects of heat treatment of tops also.

27. In an effort to ascertain the factors contributing to poor juices in certain areas, a crop log is being kept of certain fields at Gray's Inn Central on leaf nitrogen, basal node nitrogen and cane quality at monthly intervals. It is known that late tillering is a contributory cause.

28. The routine of tabulating and circulating weekly factory reports for every estate was continued. Final factory reports have been compiled and circulated and are presented as an Appendix to this report.

29. Cane yield survey tables, the summarised tables of experiment results, statistics on factories and distilleries and the final sugar factory reports are presented as appendices to this report.

B. ADMINISTRATION

In April, after prior approval by the Special Subcommittee of the Research Committee, the Association accepted at a General Meeting, a memorandum drawn up by Messrs. P. E. R. Bovell and H. S. Ive (of the West Indies Sugar Co.), Mr. W. R. Muschett (of Vale Royal) and Mr. George Clarke (of Worthy Park) in consultation with the Director, for the expansion and reorganisation of the Research Department. The memorandum stressed that as margins drop so the standard of skill required to keep pace with the limitation set by prices, increases. It set out the functions of the Research Department, stressed the long term nature of many investigations and the need for accepting a continuity of policy over the years. In addition, it outlined a new organisational design for the Department in which qualified district Research Officers would play a prominent part. It further recommended that these officers should be assisted by trainee junior officers supplied by estates at no expense to the Department. The memorandum also suggested a Budget.

The Director visited British universities in April and May and selected two Research Officers, who joined the Department in July. In October, a third Research Officer was appointed with the transfer of Mr. I. R. Cowan from the status of a Research Scholar. With the appointment of the three district officers, the reorganization of the Department has been set in motion and the coming year should see most of the change completed.

C. PRODUCTION

Another record sugar crop for the island was produced—more than 360,000 tons sugar having been manufactured. There was an increased production by both farmers and estates, giving an overall island increase of cane harvested of 12% over the previous year. Farmers increased their cane production by 17% and estates by 8%, the percentage of purchased canes ground therefore reaching a new high of 39%.

Increased tonnages of cane harvested by estates during 1954 were the result partly of increased acreage reaped (5%) and increased yield per acre (3%). The yield of cane per acre of 33.95 tons represents the highest recorded figure for records dating back to 1936, and must have been at least in part due to the reaping from increased acreages of B41227, B42231 and B4362. Barnett, Caymanas, Frome, Jamaica Sugar Estates, Monymusk, New Yarmouth, Richmond-Llandovery, Sevens and Worthy Park averaged over 35 tons cane per acre. A truer picture is obtained from a consideration of productivity rates calculated as cwt. sugar per acre per month. This again shows a record figure for the island of 6.03. Nine estates returned figures of more than 6.0 cwt. sugar per acre per month, viz., Barnett, Caymanas, Frome, Holland, Jamaica Sugar Estates, Monymusk, New Yarmouth, Sevens and Worthy Park. Of these, Sevens and Worthy Park produced sugar at a rate greater than 7.0 cwt. sugar per acre per month, and Worthy Park once again

topped the list with the remarkable performance of 8.27 cwt. sugar per acre per month.

The rate of production of sugar per acre per month makes interesting comparison with the latest ascertainable figures for some other countries (see *The Producers' Review*, 1954, 15th September, p. 9), although it is not clear on what factory basis these figures have been computed.

	Cwt. (112 lb.) sugar/acre/month
Hawaii	7.17
Queensland	5.23
Puerto Rico	3.91
Philippines	3.77
Cuba	2.93
Jamaica—All estates	6.03
Barnett, Caymanas, Frome, Holland, Jamaica Sugar Estates, Monymusk, New Yarmouth, Sevens and Worthy Park	> 6.00
Sevens and Worthy Park	> 7.00
Worthy Park	8.27

D. CLIMATE

The fully irrigated estates of St. Catherine and Clarendon (Group A—Table I) experienced a dry June and July, but this was partly balanced by heavy rains during the succeeding three months. The high rainfall during the fall was however detrimental in one respect in that it precluded the adequate preparation of land for fall planting or did not allow of fall planting at all. Innswood was the greatest sufferer in this respect.

The estates of Group B were the victims of an unusually wet year, receiving heavy rains from April to November. This was particularly disastrous to Frome during the cropping period as many of their fields were smashed up as a result of having heavy equipment on them for cane transport, and it was almost virtually impossible to repair the damage. This will probably be reflected in their cane yields in the 1955 crop. Fortunately for Appleton and Holland, cane is headed out from the fields to the intervals, but even so, excessive flooding of fields caused waterlogging for considerable periods.

Good growing seasons were experienced by the dry North Coast estates and should augur well for the coming crop. The distribution of rain throughout the year was fairly good except at Rose Hall, which had a dry spell from March to August, followed by three wet months.

Rainfall distribution for Richmond/Llandovery and Gray's Inn Central followed closely the general average pattern, but both these estates received less than average precipitation for May, June and July.

For the seven months from April to October an average in excess of 85 inches of rain fell on the Group F estates. The heaviest rains fell in September and October and must have done as much harm as good,

TABLE I
AVERAGE RAINFALL—INCHES

1954

1953

1952

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	
GROUP A:																									
Caymans	1.02	0.41	0.10	0.89	0.67	2.11	1.90	1.95	1.99	2.82	2.97	1.50	1.40	nul	1.04	0.26	5.24	2.18	1.51	2.17	8.30	4.16	2.53	1.23	0.88
Barnett Lodge	1.38	0.76	0.01	4.39	0.13	0.64	4.89	1.88	1.63	2.79	1.20	2.12	0.46	0.13	0.78	0.18	5.86	1.42	1.49	1.29	8.24	3.66	1.10	0.78	0.53
Innswood	0.70	0.32	0.86	6.23	0.30	0.31	2.93	2.60	6.90	4.25	1.21	1.40	0.97	0.86	0.40	1.37	8.91	1.93	4.81	1.43	9.86	9.02	1.78	1.28	1.07
Monymusk	0.62	0.70	0.39	2.11	0.99	1.36	2.56	0.89	6.61	8.39	1.36	5.20	0.82	0.19	1.05	0.11	12.16	2.73	6.89	1.39	13.53	4.28	0.86	1.14	0.07
New Yarmouth	0.32	0.90	0.33	1.91	0.86	0.33	3.00	1.49	7.10	8.43	3.08	3.21	1.04	0.55	1.00	0.18	10.24	2.18	10.49	1.77	17.34	4.22	1.82	0.91	0.31
Sevens	1.10	0.42	0.59	7.63	2.30	2.39	5.78	2.87	0.76	3.67	0.76	1.46	1.21	0.04	0.20	0.29	5.84	1.73	7.94	2.52	11.38	5.99	3.53	1.13	0.69
MEANS	0.87	0.20	1.04	4.03	1.33	1.31	4.01	1.96	4.89	5.45	2.37	2.48	0.98	0.36	1.06	0.20	8.73	2.87	5.62	1.86	11.09	5.99	1.94	1.18	0.59
70-YEAR MEANS	1.53	1.47	1.90	2.58	5.73	4.79	2.15	4.44	5.54	8.72	4.99	1.79	1.53	1.47	1.90	2.58	5.73	4.79	2.15	4.44	5.54	8.72	4.99	1.79	
GROUP B:																									
Appleton	0.99	1.25	2.70	1.77	10.32	6.74	6.89	10.19	10.73	10.38	4.28	0.79	3.11	0.80	4.36	3.98	9.86	4.69	2.73	12.86	8.87	8.66	9.32	1.91	11.81
Holland	1.23	0.44	1.87	8.25	10.46	7.16	11.25	9.15	6.13	10.07	3.68	1.01	5.24	2.22	1.08	2.21	13.82	5.69	6.70	6.75	6.61	4.47	10.42	1.84	1.22
Frome	0.80	1.31	1.90	2.95	8.41	9.38	8.77	10.29	11.20	11.69	3.09	0.67	4.24	1.88	3.12	7.53	10.16	6.68	4.89	10.20	6.12	6.78	3.85	3.37	0.71
MEANS	1.05	1.63	1.15	7.72	9.73	7.73	8.97	9.87	9.41	10.71	3.68	0.82	4.19	1.67	2.85	3.97	11.38	6.32	4.44	9.94	6.87	6.64	7.86	2.37	1.25
70-YEAR MEANS	2.18	3.17	4.67	8.08	12.22	7.64	7.26	9.73	9.41	12.27	5.63	2.59	2.18	3.17	4.67	8.08	12.22	7.64	7.26	9.73	9.41	12.27	5.63	2.59	
GROUP C:																									
Barnett	2.23	2.06	0.58	1.33	11.27	5.08	2.09	6.57	9.33	10.48	2.18	2.06	5.50	0.80	0.98	4.09	9.02	4.75	3.74	8.43	10.62	2.48	4.01	3.59	0.25
Rose Hall	0.97	1.90	0.74	3.27	4.09	2.34	1.46	0.48	3.32	3.80	1.27	2.36	7.80	1.46	0.10	0.71	6.16	2.93	0.83	0.91	9.04	5.16	4.85	2.01	0.94
Green Park	4.10	0.36	0.24	3.11	9.13	4.36	2.03	2.08	11.66	6.82	6.13	1.27	6.56	0.99	0.75	1.66	8.86	4.21	1.59	5.22	10.42	3.78	4.54	4.33	1.48
Long Pond	2.13	1.47	0.17	3.07	3.98	4.54	2.08	3.82	5.68	6.04	3.50	9.27	0.40	0.79	0.87	9.99	1.65	1.09	0.92	6.38	1.33	7.48	3.93	0.52	
Vale Royal	2.87	2.48	0.12	4.04	3.44	4.86	2.50	2.25	4.44	6.91	4.72	4.33	11.25	0.25	1.69	1.17	12.33	3.42	1.34	2.03	5.62	2.16	9.02	4.43	0.04
MEANS	2.24	1.33	0.34	3.11	6.37	3.81	1.92	2.70	6.89	6.44	4.90	3.16	7.74	0.78	1.04	1.35	9.10	3.59	1.44	2.21	8.50	3.18	5.93	3.69	0.84
70-YEAR MEANS	3.62	2.15	1.91	2.66	6.44	4.52	2.71	4.19	5.12	6.72	5.76	5.43	3.62	2.15	1.91	2.66	6.44	4.52	2.71	4.19	5.12	6.72	5.76	5.43	
GROUP D:																									
Richmond/Llan-	2.94	2.01	2.23	5.91	3.04	8.05	3.45	1.46	2.21	6.57	5.87	7.67	14.50	3.86	2.62	4.07	10.19	3.33	1.30	1.11	6.82	0.19	9.88	2.82	0.95
doverly	5.69	4.06	2.88	3.69	6.18	4.06	2.06	2.37	3.71	6.87	9.39	7.46	5.69	4.06	2.88	3.69	6.18	4.06	2.06	2.97	3.71	6.87	9.39	7.46	
70-YEAR MEANS	5.69	4.06	2.88	3.69	6.18	4.06	2.06	2.37	3.71	6.87	9.39	7.46	5.69	4.06	2.88	3.69	6.18	4.06	2.06	2.97	3.71	6.87	9.39	7.46	
GROUP E:																									
Gray's Inn C.	3.96	3.70	5.67	9.30	6.34	3.33	6.50	1.48	4.57	8.72	5.90	11.11	10.59	5.92	2.71	0.66	11.40	4.69	3.62	4.53	4.51	3.29	11.13	4.61	3.38
MEANS	3.96	3.70	5.67	9.30	6.34	3.33	6.50	1.48	4.57	8.72	5.90	11.11	10.59	5.92	2.71	0.66	11.40	4.69	3.62	4.53	4.51	3.29	11.13	4.61	3.38
GROUP F:																									
Jam. Sug. Eats.	1.20	1.78	2.47	4.63	2.97	8.51	9.27	2.89	8.92	7.94	5.42	17.42	4.71	1.27	0.88	0.88	19.02	15.49	4.69	8.84	14.73	11.69	13.69	2.88	3.19
Serge Island	1.44	1.70	0.88	3.25	2.58	6.80	15.51	2.83	10.17	12.27	2.39	8.98	3.64	0.57	0.88	0.60	24.13	10.31	5.00	6.11	18.92	9.76	5.65	1.93	1.21
MEANS	1.37	1.79	1.68	3.94	2.77	7.80	12.39	2.63	9.54	10.15	3.90	13.20	4.17	1.32	1.88	0.74	21.57	12.90	4.76	7.50	16.82	10.72	9.63	2.40	2.16
70-YEAR MEANS	1.37	1.79	1.68	3.94	2.77	7.80	12.39	2.63	9.54	10.15	3.90	13.20	4.17	1.32	1.88	0.74	21.57	12.90	4.76	7.50	16.82	10.72	9.63	2.40	2.16
GROUP G:																									
United Estates	0.91	1.67	1.35	9.42	4.55	7.36	4.89	7.05	10.89	4.49	1.47	1.56	4.18	2.90	0.95	1.71	11.61	5.32	10.27	3.61	6.74	8.05	1.49	1.14	2.11
Worthy Park	0.96	1.74	0.91	9.24	4.41	7.33	3.21	5.31	7.42	6.88	1.30	2.00	3.20	2.16	2.99	0.27	12.28	5.36	7.07	3.13	7.95	9.91	4.14	1.39	1.29
MEANS	0.94	1.71	2.13	9.33	4.48	7.29	4.05	6.18	9.15	5.68	1.38	1.79	3.69	2.16	1.67	0.99	11.89	5.35	8.67	3.37	7.94	8.98	2.82	1.29	1.70
70-YEAR MEANS	2.47	2.04	2.62	3.96	8.11	7.26	5.03	6.59	7.16	9.70	6.22	2.47	2.47	2.04	2.62	3.96	8.11	7.26	5.03	6.59	7.16	9.70	6.22	2.47	

TABLE II

NO. OF DAYS IN EACH MONTH ON WHICH AVERAGE PRECIPITATION EXCEEDED 0.5 INCHES

1954

1953

1952

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
GROUP A:												
Caymanas ..	1	-	-	-	4	1	1	1	3	4	1	1
Bernard Lodge ..	1	-	-	-	4	1	-	-	4	2	-	-
Innswood ..	-	-	2	4	3	1	1	1	5	1	-	-
Monynusk ..	1	2	-	2	-	-	1	-	3	5	-	-
New Yarmouth ..	-	2	-	1	1	-	2	1	5	4	1	2
Sevens ..	1	2	1	6	1	2	5	1	3	4	3	1
GROUP B:												
Appleton ..	1	-	2	9	8	5	3	8	11	7	2	1
Holland ..	1	2	1	8	5	6	7	6	3	6	-	-
Frome ..	-	-	-	-	8	9	6	12	9	7	-	-
GROUP C:												
Barnett ..	1	2	1	1	7	2	1	3	7	6	2	2
Rose Hall ..	-	1	-	3	3	-	-	-	2	2	4	1
Green Park ..	2	-	-	1	4	-	1	1	7	5	3	3
Hampden ..	-	-	-	-	-	3	2	2	11	8	4	-
Long Pond ..	1	1	-	3	3	2	-	-	2	3	3	2
Vale Royal ..	2	2	4	3	2	2	-	-	2	4	3	2
GROUP D:												
Richmond/ Llandoverly ..	1	1	5	2	1	2	1	1	-	4	3	5
GROUP E:												
Gray's Inn C. . .	2	3	1	4	5	3	6	1	2	3	1	7
GROUP F:												
Jam. Sug. Ests. Serge Island ..	1	-	2	3	2	3	7	-	6	4	2	5
GROUP G:												
United Estates Worthy Park ..	-	-	6	2	6	2	4	6	1	1	1	-
	-	1	2	8	4	6	2	2	-	6	1	1

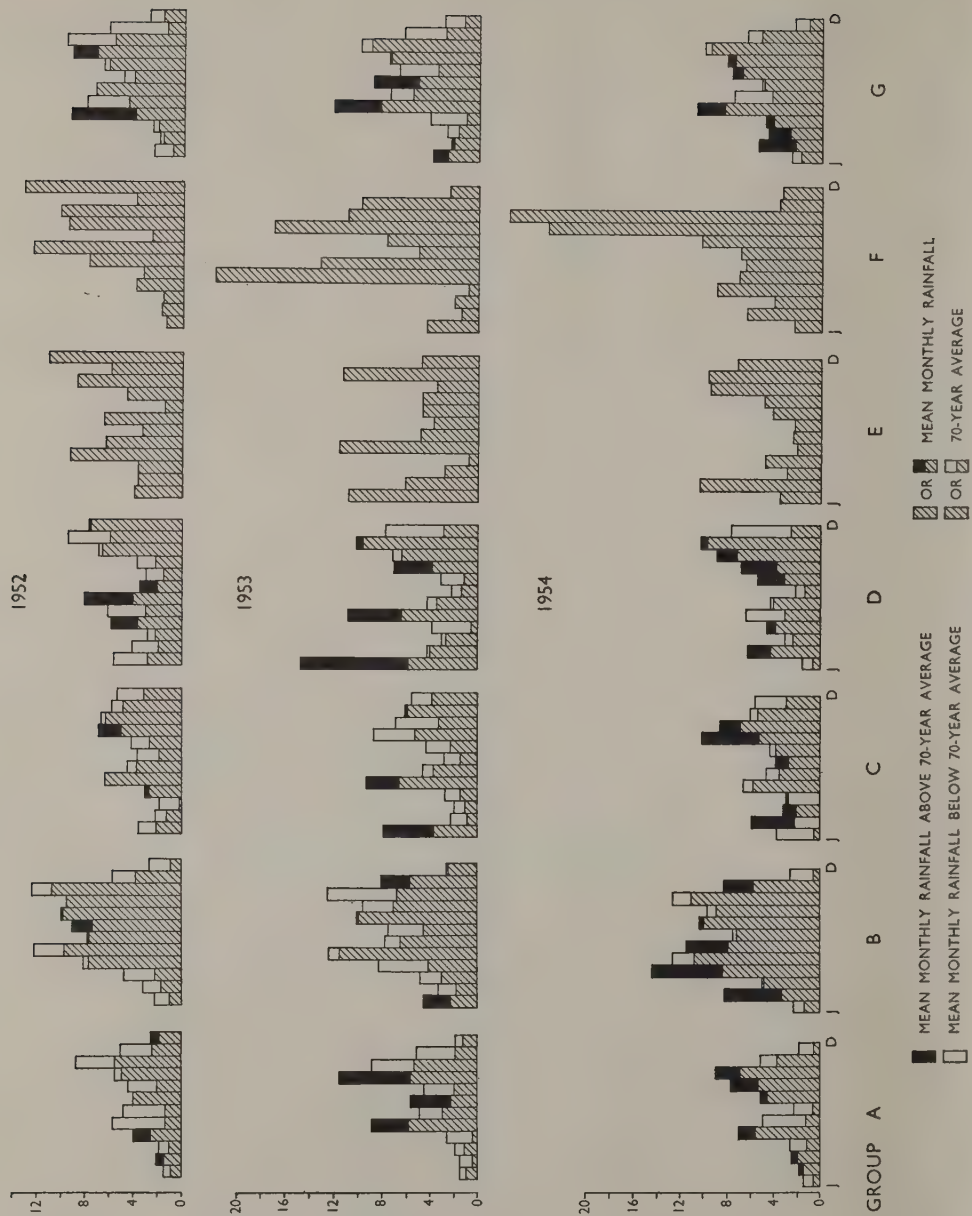


FIGURE 1

These estates have had relatively dry months in November and December, which may be an indication of better juices for the 1955 crop.

Rainfall for Group G estates was well distributed but for a dry spell in June and July. The December rains have been less than average and may help juice quality though it may handicap the spring plants and last cut ratoons.

Meteorological Data

The wide differences in climatic conditions throughout the island are reflected in the meteorological data which have been collected over the four stations. Average daily sunshine ranges from $5\frac{1}{2}$ hours at Hampden to $7\frac{1}{2}$ hours at Monymusk; Worthy Park's figures are $6\frac{1}{4}$ hours and Jamaica Sugar Estates— $6\frac{1}{2}$ hours. The stations show variations in their mean maximum and minimum temperatures. The range of temperature was the lowest (13.4°F .) at Jamaica Sugar Estates and highest (21.3°F .) at Hampden. The influence of elevation is noted in the overall low temperatures at Worthy Park with a mean minimum of 62.7°F . and a mean maximum of 81.8°F .

The mean daily figures of evaporation from open water tanks are interesting and show the following variation:—

	Mean daily evaporation in inches, averaged over any month	
	Summer	Winter
	(Maximum)	(Minimum)
Hampden	0.16 (June)	0.09 (Nov.-Jan.)
Jamaica Sugar Estates ..	0.20 (Aug.)	0.12 (Nov.)
Monymusk	0.27 (July)	0.17 (Dec.)

And, as it is safe to assume that the transpirational requirements of sugar cane are related to the evaporation from free water surfaces, the figures indicate how different must be the water requirements of sugar cane grown under the different ecological areas of the industry. The same rainfall in Trelawny goes a much longer way to supplying cane needs than it does at Monymusk.

E. IRRIGATION

Irrigation studies have been mainly concerned with testing the evapotranspiration methods of estimating the water requirements of sugar cane, and the relation of irrigation interval to such estimates, having regard to soil type, age and variety of crops.

(a) Evapotranspiration computed from meteorological data

Meteorological stations at Monymusk and Richmond have been designed and operated to study the climatic factors expected to regulate the evaporation from natural surfaces. The monthly values of open water evaporation estimated using Penman's equation,* and applied to the Monymusk data compare very well with measured values of evaporation provided that a relation similar to that found by Prescott in Australia is used to calculate the incoming solar radiation from the duration of bright sunshine. Bright measurements of solar radiation, however, have yielded higher values than are obtained by Prescott's equation, and further investigation is required.

TABLE III
MONYMSK METEOROLOGICAL DATA—1954

	Average temperature ($^{\circ}\text{F}$.)	Average humidity (%)	Average wind speed (miles/day)	Average sunshine (hours)	Estimated E_o (in./month)	Measured E_o (in./month)
April	78.1	78.9	132.3	7.61	7.36	7.50
May	79.5	79.9	122.0	8.34	8.03	8.19
June	80.4	80.2	72.1	7.73	7.30	7.28
July	80.7	78.2	135.2	8.27	8.27	8.24
August	79.4	80.1	107.7	7.91	7.58	7.52
September ..	78.9	85.0	94.4	6.17	6.20	6.04
October	78.6	86.4	78.3	6.69	6.07	5.99
November ..	75.6	82.3	69.4	8.15	5.34	5.08
December ..	75.6	78.2	83.2	8.66	5.37	5.28
January	72.9	74.4	84.6	8.22	5.25	5.51

E_o = Inches evaporation/month from a standard Meteorological Office tank.

$$* E_o = \frac{0.27E_s + \Delta H}{0.27 + \Delta}$$

$$\text{where } E_s = 0.35 (e_s - e_d) \left(1 + \frac{u}{100}\right)$$

$$\text{and } H = (1 - r) R - aT^4 (0.56 - 0.09\sqrt{ed}) (0.10 + 0.90 \frac{n}{N})$$

E_o = Evaporation (mm./day)

T = Average air temperature ($^{\circ}\text{A}$)

e_s = Saturation vapour pressure at temperature T (mm. Hg)

e_d = Average atmospheric vapour pressure (mm. Hg)

Δ = Slope of vapour pressure: temperature curve at temperature T (mm. Hg/ $^{\circ}\text{F}$)

u = Average daily run of wind at height of 2 metres (miles)

R = Average daily total incoming short wave radiation (units of the latent heat of one millimetre of water)

R is either measured directly or estimated using a relationship such as that of Prescott:—

$$R = R_o (0.54 + 0.22 \frac{n}{N})$$

where R_o is the radiation which would be received in the absence of an atmosphere

n = Average daily sunshine (hours)

N = Average daily sunshine that would be received in the absence of cloud (hours)

r = Coefficient of reflection of evaporating surface

a = Stefan's constant (latent heat of one millimetre of water per day/ $^{\circ}\text{A}^4$)

The excellent agreement between measured evaporation and that derived from meteorological data is evident from the last two columns in Table III. The coefficient of correlation between the figures in these two columns is 0.99^{xx}.

(b) Evapotranspiration tanks

If the evapotranspiration concept of irrigation control is to be developed, a reliable measure of evapotranspiration over the controlled area is important, and a cheap source of suitable tanks would be useful. The evaporation from small open pans of water made from 44-gallon oil drums cut in two and sunk flush with the ground, is similar to that from the standard Meteorological Office open water tank, provided the ground immediately surrounding the tanks is similarly turfed. It appears that the size and depth of the tank used are not critical down to the limits of a one-half oil drum.

(c) The quantity of water used by cane in transpiration and its relation to daily growth

An indirect method was evolved of determining the quantity of water used by cane under normal field conditions. The regression of the daily growth of sugar cane (stem elongation) upon accumulated soil moisture deficit was examined on the assumption that the water used by sugar cane under normal field conditions was a fraction "f" of the water evaporated, "E_o" from an open water tank, and that soil moisture deficit was defined as:

$$R - f.E_o$$

where R was the rainfall. The summation of deficit extended from the time at which the soil was last at field capacity. The definition of deficit used implied that no water had been lost to drainage so that periods of light natural rain and evenly distributed measured quantities of overhead irrigation were examined.

Partial linear regressions of growth (G) on open water evaporation E_o and rainfall (and irrigation) (R) were derived from four sets of data, with the following results:—

$$G - 1.81 = 0.43 (R - 0.61 E_o) \quad \dots \quad (1)$$

$$G - 2.15 = 0.61 (R - 0.58 E_o) \quad \dots \quad (2)$$

$$G - 2.07 = 0.60 (R - 0.57 E_o) \quad \dots \quad (3)$$

$$G - 1.74 = 0.55 (R - 0.55 E_o) \quad \dots \quad (4)$$

giving a mean value of 0.58 for "f." In other words, cane transpires 0.58 of open water evaporation. Furthermore, the relationship derived between growth and deficit was linear which suggests that growth rates begin to suffer even after very low losses of soil moisture have occurred. Verification of this will be sought by continuation of the experiment and by a direct measurement of the water demand of cane and grass grown in soil tanks.

(d) The optimum soil moisture deficit at which to irrigate

Formal field experiments have been set out at Richmond and Monymusk to determine the optimum soil moisture deficit at which to irrigate sugar cane. To

these have been added studies of the relationship between the growth rate of cane on a field to field basis and applied rainfall and/or irrigation water. The work was carried out and is being continued on a survey basis at Rose Hall and Richmond. The results should help to extend the data obtained from formal experiments to other soils and varieties.

(e) The merits of surface vs. overhead irrigation

Little or no information is available on whether overhead irrigation produces more sugar per acre than surface irrigation when the latter is applied in quantities and with frequencies sufficient to maintain uniform growth curves. The matter is of importance in evaluating the advantage, if any, of overhead irrigation where water is cheap and plentiful. With the help of Caymanas Estates, an experiment was laid out to measure these effects, also to ascertain whether varieties responded differently to the two methods of irrigation and whether the close spacing permitted by overhead irrigation was of benefit.

(f) Rainer calibration

Rainers of various kinds were calibrated. All the widely spaced, long throw rainers, irrigating between two and three acres which were examined, suffered from distorted distribution which increased to a peak rainfall at about $\frac{3}{4}$ radius distance, falling abruptly thereafter. The studies indicate the need for closer riser spacings than are often recommended.

(g) The relationship between yield, irrigation and fertilizer requirement

Little is known about the interaction between water supply, nutrition requirement, varieties and yield. Work is being commenced at Monymusk to examine the level of yields which can be obtained on a field scale when water is not a limiting factor, whether, under such conditions, relative variety performance changes, and whether the optimum fertilizer requirement becomes appreciably increased. There is evidence which suggests that current irrigation cycles are sub-optimum on many areas. It is therefore important to find out the level of yield and related considerations, as well as the related costs, if water and plant food were applied at near optimum levels for a suitable variety.

F. NUTRITION

(a) The fertilizer practices of sugar estates

A summary of the fertilizers consumed and the manner in which they were used is given in Table VIII of Appendix I. Of the total acreage in estates' canes reaped in 1954, 94% received an application of nitrogen, 9% an application of phosphate and 42% an application of potash. These figures are very similar to those for 1953.

A breakdown of the rates of application of fertilizers for the different ecological areas is given in Table IX of Appendix I. The figures for nitrogen applications reflect the available moisture situation—in the dry North Coast the nitrogen dressing is equivalent to

approximately 2 cwt. sulphate of ammonia per acre, in the medium rainfall, Central Estates, 3 cwt. sulphate of ammonia per acre and in the areas of high rainfall, medium rainfall as well as supplemental irrigation and adequate irrigation, 4 cwt. per acre. The fully irrigated estates of St. Catherine and Clarendon tend to use more nitrogen than all the other areas. The greatest amounts of phosphates are used in the Wet West Coast and Central Estates, the least being used by the irrigated and North Coast estates. The biggest users of potash are the Wet West Coast, the Central and the North Coast estates.

(b) Fertilizer advisory work

Eighty-three formal fertilizer experiments were reaped during 1954 (see Table IV) and, together with leaf and soil analysis, formed the basis of the fertilizer advisory programme. In the past, it has been the practice to lay out experiments of a formal design which allowed of the maximum reduction of experimental error, but of limited coverage. Experience suggests that it would be of greater benefit if efforts were directed towards obtaining a greater cover of experiments, even at the expense of increasing error. Accordingly, a policy has been adopted of splitting experiments

into their constituent blocks and of dispersing the blocks on to separate fields. The reorganization of fertilizer experiments along these lines was commenced during the year.

(c) The analysis of the results of field experiments by Rothamsted Statistical Division

The results of all fertilizer experiments reaped by the Department were submitted to Rothamsted Experimental Station along with relevant notes, in order that all the data might be examined and conclusions drawn. Mr. G. E. Hodnett, the officer responsible for the work, visited the Department in this connection. The conclusions drawn to date confirm those already arrived at by the Department.

(d) The differential fertilizer requirements of varieties

Although experiment results suggest that the nutritional requirements of varieties may vary, it was not possible to obtain concrete evidence to confirm this. In the circumstances, there is little to be gained from any change of fertilizer policy as a result of the extension of the newer varieties.

TABLE IV
NO. AND DISTRIBUTION OF FERTILIZER EXPERIMENTS IN OPERATION DURING 1954

	FALL PLANTS			SPRING PLANTS		RATOONS			Total
	Planted 1952	Planted 1953	Planted 1954	Planted 1953	Planted 1954				
	Reaped 1954	To be reaped 1955	To be reaped 1956	Reaped 1954	To be reaped 1955	Reaped 1954			
						1st	2nd	3rd	
Northern Division:									
Barnett	—	—	—	—	—	1	3	—	4
Hampden	—	—	—	—	—	—	2	—	2
Long Pond	1	1	2	—	—	—	1	—	5
Richmond/Llandovery	—	2	1	1	2	1	1	—	8
Rose Hall	1	—	—	1	2	—	—	—	4
Vale Royal	—	—	—	1	—	—	5	—	6
Central Division:									
Appleton	1	—	—	—	—	—	3	—	4
Frome	1	1	—	—	2	12	11	—	27
Holland	—	—	—	—	—	1	—	—	1
Monymusk	—	—	—	—	—	4	3	—	7
New Yarmouth	1	—	—	—	—	1	1	—	3
Sevens	—	—	—	—	—	1	1	—	2
Eastern Division:									
Bernard Lodge	—	—	—	—	—	—	—	—	—
Caymanas	—	—	—	1	—	1	—	—	2
Gray's Inn Central	—	—	—	—	—	2	—	—	2
Innswood	—	—	—	1	1	—	2	—	4
Jamaica Sugar Estates	2	—	—	—	1	—	1	—	4
Serge Island	—	—	—	1	—	—	—	—	1
United Estates	4	—	—	2	1	3	2	—	12
Worthy Park	—	—	—	—	—	—	—	1	1
Totals	11	4	3	8	9	27	36	1	99

(e) The relationship between leaf nitrogen and sugar cane response

The data accumulated on the nitrogen levels found in the leaves of sugar cane experiment plots were subjected to statistical examination. The regression between the relative increase in production of sugar per acre (Y) as a result of applying near optimum economic dressings of nitrogen, and the N % leaf dry matter (X) in the absence of nitrogen application has been shown to be satisfied by the following relationships:—

$$\begin{array}{ll} \text{Sampled at 4 months} & \text{Sampled at 5 months} \\ Y = 181 - 33X^x & Y = 216 - 55X^{xx} \\ \text{or } Y = \frac{165^x}{X^{0.38}} \dots \dots (1) & \text{or } Y = \frac{167^{xxx}}{X^{0.60}} \dots \dots (2) \end{array}$$

When the 5% fiducial limits were worked out, it was concluded that cane showing leaf nitrogen figures of 2.4% at 4 months, or 2.3% at 5 months, was adequately supplied. The figure for ratoons is much lower. Thus the linear regression—

$$Y = 336 - 129X$$

obtained for ratoons at 5 months, gave a critical value of 1.83 N% dry matter.

When the data were examined by comparing the relative response in nitrogen uptake against the relative response in yield (sugar/acre), it was shown that a 6% increase in leaf nitrogen was associated with a significant increase in yield. Indeed, a working quantitative prediction of relative responses to nitrogen dressings was found by relating relative increase in yield to the corresponding increase in leaf nitrogen level. Thus the treatment which produced an increase of X% in N% dry matter resulted in Y% increase in the yield of sugar per acre. The relationships are linear and much more accurate than the relationship between yield and nitrogen level in the leaf. They suggest that they could form a useful basis for prediction of response to nitrogen. The equations averaged over plants and ratoons were of the form—

$$\begin{array}{l} \text{At 4 months} \\ Y = 1.18X - 13.1 \text{ (significant at infinity: 1) } \dots (3) \end{array}$$

$$\begin{array}{l} \text{At 5 months} \\ Y = 1.33X - 27.0 \text{ (significant at infinity: 1) } \dots (4) \end{array}$$

In other words, a nitrogen dressing which increases relative leaf nitrogen at 4 to 5 months by X%, will result in an increased yield of sugar per acre of from 1.2 to 1.3X%.

The diagrammatic representation of the nitrogen relationships of cane is given in Figs. 2, 3, 4 and 5.

(f) The relationship between leaf phosphate and sugar cane response

The uptake of phosphate as reflected in P₂O₅ % dry matter of the lamina of the 3rd fully opened leaf is influenced not only by the application of phosphate but also by the application of nitrogen and potash, especially when these latter affect yield.

The response of the phosphate status of the lamina of the 3rd fully opened leaf to a standard dressing of

superphosphate (3 cwt. per acre per annum of superphosphate—18% P₂O₅) is highly correlated with the level of phosphate in the leaf, had no superphosphate been applied. The relationship is curvilinear and is fitted by the two hyperbolic expressions:—

$$\begin{array}{l} \text{At 4 months} \\ Y = \frac{206}{X^{0.39}} \dots \dots (5) \end{array}$$

$$\begin{array}{l} \text{At 5 months} \\ Y = \frac{168}{X^{0.28}} \dots \dots (6) \end{array}$$

each significant at infinity to one.

After plotting the 5% fiducial limits of the relationships, it is evident that, on the average, applied superphosphate will have little or no effect upon leaf phosphate if this already stands at 0.60% P₂O₅ or higher (at 4 to 5 months).

When the relationship between phosphate level in the index tissue (X) and the relative increase in sugar per acre (Y) to a standard dressing of superphosphate (3 cwt. per acre per annum 18% P₂O₅) was examined, it was shown that significant regressions exist, the most accurate being obtained for cane aged 4 months. Linear regressions fitted the data as well as curved equations, and were as follows:—

$$\begin{array}{l} \text{At 4 months} \\ Y = 141 - 69.5X^{xxxx} \dots \dots (7) \end{array}$$

$$\begin{array}{l} \text{At 5 months} \\ Y = 126 - 44.6X^{xx} \dots \dots (8) \end{array}$$

By plotting the fiducial limits of these relationships we have concluded that, on the average, yield responses would be expected if the P₂O₅ in leaf lamina at 4 months was less than 0.50%. Below this figure the average expected response to 3 cwt. per acre of superphosphate would be 5% or more, i.e., on the average, more than 1.5 tons cane.

The data also show that highly significant linear relationships exist between the relative uptake of phosphate (P₂O₅) in leaf tissue (X) and the relative increase in sugar per acre (Y), each consequent upon the application of the same amount of super-phosphate to the soil (compare nitrogen). They are of the form:—

$$\begin{array}{l} \text{At 4 months} \\ Y = 0.41X + 59 \dots \dots (9) \end{array}$$

$$\begin{array}{l} \text{At 5 months} \\ Y = 0.32X + 70 \dots \dots (10) \end{array}$$

(each significant at infinity to one)

Although these relationships are accurate, unfortunately they cannot be used as an effective advisory tool since it would be impracticable to correct an inadequate phosphate uptake by phosphate dressings when cane is 4 months or more old. The relationship could be used as a guide to fertilizing the next crop cycle.

The various mathematical relationships discussed as well as their fiducial limits are given diagrammatically in Figs. 6, 7, 8 and 9.

During the year seventy-one plots were dispersed over Rose Hall fields to study the uptake and response

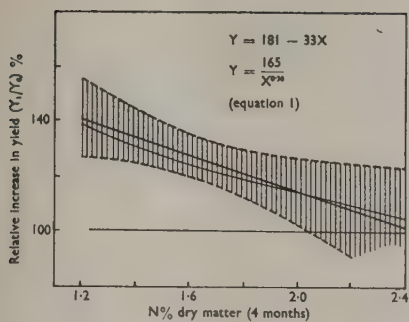


FIGURE 2

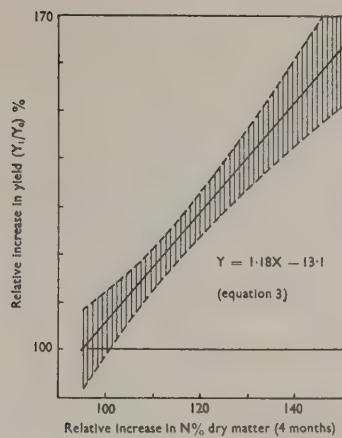


FIGURE 3

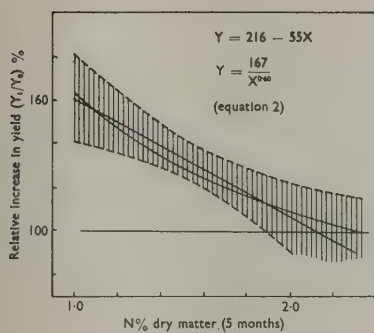


FIGURE 4

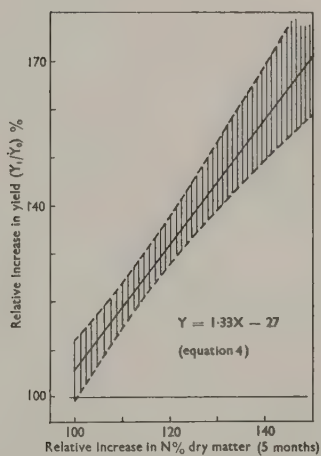


FIGURE 5

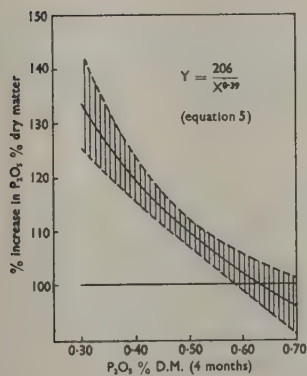


FIGURE 6

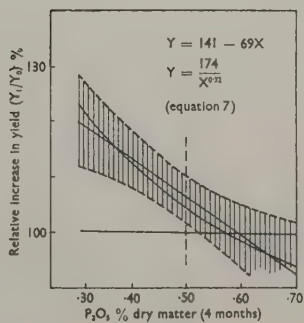


FIGURE 7

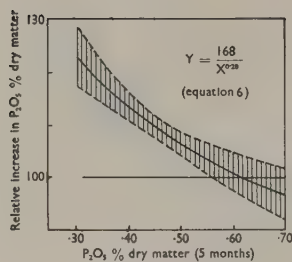


FIGURE 8

from superphosphate applied to calcareous soils. Leaf analytical data were obtained. The yield data will be available in 1955. The leaf responses to applied phosphate confirm that no increased uptake resulted where leaf phosphate figures exceeded 0.50 P_2O_5 % dry matter at 4 months. On the other hand, the response to superphosphate as reflected in leaf phosphate levels was about one-third of that expected from the mean relationships quoted in (5) which suggests that the value of superphosphate under Rose Hall conditions is being severely reduced by soil factors—presumably the very calcareous nature of the soils and their associated high alkalinity.

(g) The use of aqueous ammonia as a source of nitrogen

It is possible that aqueous ammonia can be landed in Jamaica at prices per cent of nitrogen much below that of sulphate of ammonia. Whether it displaces sulphate of ammonia in sugar cane agriculture will depend upon its cost applied to the soil, and upon the use which sugar cane makes of it relative to sulphate of ammonia, i.e., upon the relative response of sugar cane to nitrogen supplied as aqueous ammonia compared with nitrogen supplied as sulphate of ammonia. Results elsewhere indicate that such ammonia as remains in the soil is as effective as any other source of nitrogen. The important factors are therefore the physical loss of ammonia during application and the physico-chemical loss from the soil after application.

The work being undertaken is of two main kinds. The response of sugar cane is being examined in field experiments at Monymusk to nitrogen applied at three levels, to plants and ratoons, to heavy and light soils, and in two forms, viz., sulphate of ammonia and aqueous ammonia. The aqueous ammonia is being applied at the soil surface, drilled into the soil, and by irrigation water. Monymusk personnel are responsible for the field administration of the experiments. So far, four experiments have been laid out; more should follow in the spring of 1955. Added information is being obtained by studying the relative nitrogen levels in leaf and stalk tissues from the different plots.

In the laboratory, a survey is being carried out of the tenacity with which ammonia injected into soil

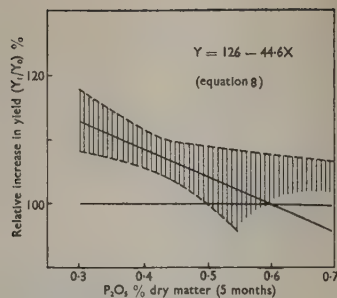


FIGURE 9

is held, and the losses of ammonia likely to occur from soils representative of the main soil types devoted to sugar cane. The results will enable us to apply the field data obtained at Monymusk to soils on other estates.

(h) The plant food element status of estates' cane

(i) Trace elements

The reasons for carrying out a study of the field to field variation in the trace element status of sugar cane tissue were given in the 1953 Annual Report. During 1954, the analytical work connected with the survey was completed. Because of the time involved in determining trace element composition accurately, it became necessary to restrict the investigation to leaf lamina material only. A summary of the variation in sugar cane lamina composition with respect to the trace elements—copper, manganese, zinc and iron as well as of the elements—calcium, magnesium and sodium, is now available. Boron and molybdenum remain to be determined. The importance of molybdenum deficiency is likely to be rare because of the general absence of extremely acid soils. (Trace element work on sugar cane is also proceeding in Hawaii and British Guiana.)

At present data on the critical levels of trace element concentration in sugar cane leaf tissue are scarce, so that the survey figures obtained serve principally to indicate areas of relatively low or high uptake. The distribution diagrams give a picture of the results obtained.

Copper

The average copper content was between 5 to 7 p.p.m. with 9% of the samples falling below 4 p.p.m. These latter may represent deficiency conditions. H. Evans' experience in British Guiana suggests that 4.5 to 5.0 p.p.m. Cu in leaf lamina dry matter is near the critical level for copper. The actual distribution of the samples by sugar estates is given in Table V (above).

The range of sugar cane soils on estates is not such as to include types usually associated with copper deficiency in other crops, e.g., reclaimed heath soils,

TABLE V

NO. OF FIELDS OR SECTIONS IN EACH ESTATE SHOWING p.p.m. COPPER IN LEAF DRY MATTER
FALLING WITHIN A PARTICULAR RANGE

Estates	0.0 to 1.0	1.1 to 2.0	2.1 to 3.0	3.1 to 4.0	4.1 to 5.0	5.1 to 6.0	6.1 to 7.0	7.1 to 8.0	8.1 to 9.0	9.1 to 10.0	10.1 to 11.0	11.1 to 12.0	12.1 to over	Total fields sampled
Appleton	—	—	—	—	1	1	5	5	6	2	3	—	—	23
Barnett	—	—	—	—	2	—	2	4	2	3	—	1	1	15
Bernard Lodge ..	—	—	1	2	6	10	15	27	12	5	—	—	—	78
Caymanas	—	—	—	1	5	29	46	20	2	4	—	1	1	109
Frome	—	—	1	—	7	18	20	16	4	1	—	1	—	68
Gray's Inn Central ..	—	—	—	4	10	9	—	—	1	—	—	—	—	24
Hampden	—	—	—	—	1	15	14	4	1	—	—	—	5	40
Holland	1	1	1	1	7	4	—	—	—	—	—	—	—	15
Innswood	—	—	3	15	4	3	—	1	—	—	—	—	—	26
Jamaica Sugar Estates	—	—	—	3	9	29	29	17	3	3	2	—	1	96
Long Pond	—	—	—	—	7	10	20	2	1	—	—	1	—	41
Monymusk	—	1	3	20	45	46	37	14	4	1	—	—	—	171
New Yarmouth ..	—	—	1	8	11	10	6	3	—	1	—	—	—	40
Richmond/Llandovery	—	—	—	2	1	14	11	3	1	—	—	—	—	32
Rose Hall	—	—	—	2	—	7	9	5	—	—	—	—	—	23
Serge Island	—	—	2	5	13	28	4	1	—	—	—	—	—	53
Sevens	—	—	—	—	—	8	10	1	—	—	—	—	—	19
United Estates ..	—	—	1	5	8	7	3	1	—	—	—	—	—	25
Vale Royal	—	—	—	—	5	18	17	—	—	—	—	—	—	40
Worthy Park	—	—	1	2	4	5	4	2	—	—	—	2	—	20
* Average	0.1	0.2	1.5	7.3	15.2	28.3	26.3	13.2	3.9	2.1	0.5	0.6	0.8	958

peats and poor acid soils and coarse quartzose gravels, except the instances of copper deficiency reported on highly calcareous soils in Australia. The highly calcareous soils of Rose Hall and Richmond-Llandovery have not given copper analyses as low as other sugar areas whilst the calcareous peat soils of part of Caymanas did not give samples of abnormally low copper contents such as are obtained on sugar cane in the Everglades of Florida. (The copper deficiency symptoms of sugar cane as described by D. R. L. Steindl—1948, *Cane Growers' Quarterly Bulletin*, Brisbane XI, p. 175—have never been reported in Jamaica, neither is sugar cane grown in soils similar to those which produce copper deficiencies in Queensland.)

Zinc

Reference to Table VI shows that the greater proportion of the sugar cane samples gave zinc contents of between 14 and 24 p.p.m. dry matter and, as many high yielding fields fall in this range it is improbable that acute zinc deficiencies can be expected when the level is greater than 14 p.p.m. Zn in dry matter. Evans working in British Guiana accepts provisionally a zinc value of less than 15 p.p.m. dry matter as indicating deficiency levels. Although soil alkalinity tends to reduce the availability of soil zinc supplies (and many of the Jamaican sugar cane soils are alkaline), the range of conditions under which Zn deficiency has been reported in crops is very great. There seems no good reason therefore to assume that zinc deficiencies can

be excluded because of general soil considerations. Compared with British Guiana, the uptake of zinc by sugar cane in Jamaica is much lower—14 to 24 p.p.m. compared with 50 to 70 p.p.m.—an observation which may be related to the generally acid nature of British Guiana soils as against the prevailing alkalinity of most of the surface soils of Jamaican sugar cane areas.

Manganese

Manganese deficiency of economic importance has been reported in cane in many countries. The symptoms of Pahala Blight described by Martin† are well known and have been reported in Jamaica by officers of this Department. The symptoms are seen at Rose Hall and Richmond-Llandovery on very calcareous soils. They have also occurred at Bernard Lodge on alkaline (pH 9.0) soils, being particularly severe in the sprouts of ratoons. The same symptoms are seen in a much less marked form on young stubble on parts of Monymusk, New Yarmouth, Caymanas and the calcareous soils of Frome. On these estates, a faint striped chlorosis similar to manganese deficiency symptoms is not uncommon.

As may be seen from Table VII the manganese content of sugar cane leaf lamina generally lies between 20 and 80 p.p.m. dry matter. The threshold value of manganese in cane leaf dry matter is probably between 20 and 30 p.p.m.‡ so that much of Jamaica's sugar cane may approach a deficient state as visual

* Average = The total number of fields in a particular range expressed as a percentage of the total fields sampled over the island.

† Martin, Joseph P.—1938, *Sugar Cane Diseases in Hawaii*—Honolulu, p. 95.

‡ Evans, H.—Private communication—Mauritius experience.

symptoms already suggest. Compared with British Guiana, where the manganese in cane leaf lamina dry matter varies between 100 and 200 p.p.m.,* Jamaican figures are very low, which is as would be expected for most of Jamaica's sugar soils are neutral to alkaline, whilst British Guiana soils are acid.

TABLE VI
NO. OF FIELDS OR SECTIONS IN EACH ESTATE SHOWING p.p.m. ZINC IN LEAF DRY MATTER
FALLING WITHIN A PARTICULAR RANGE

Estates	0-0 to 8-0	8-1 to 10-0	10-1 to 12-0	12-1 to 14-0	14-1 to 16-0	16-1 to 18-0	18-1 to 20-0	20-1 to 22-0	22-1 to 24-0	24-1 to 26-0	26-1 to 28-0	28-1 to 30-0	30-1 and over	Total fields sampled
Appleton	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Barnett	3	—	1	3	3	1	1	2	—	—	—	3	—	15
Bernard Lodge ..	—	—	—	7	6	6	13	2	4	2	4	1	17	62
Caymanas	—	—	1	6	23	23	25	12	9	7	3	—	—	109
Frome	—	—	2	2	10	9	15	4	14	5	3	3	1	68
Gray's Inn Central ..	—	—	—	5	6	2	3	1	4	2	1	—	—	24
Hampden	—	—	—	4	7	6	6	6	3	3	1	1	3	40
Holland	—	—	—	—	—	2	5	3	3	1	1	—	—	15
Innswood	—	—	1	3	5	3	7	2	1	3	1	—	—	26
Jamaica Sugar Estates	—	—	5	9	11	18	16	5	12	5	5	2	8	96
Long Pond	—	—	—	1	6	4	13	1	7	1	3	—	4	40
Monymusk	—	1	8	19	27	38	22	17	23	5	3	2	6	171
New Yarmouth ..	2	—	—	1	2	5	8	11	5	3	—	2	1	40
Richmond/Llandoverly	—	—	1	6	8	5	3	2	4	1	1	—	—	31
Rose Hall	—	—	—	—	8	1	3	2	3	6	—	—	—	23
Serge Island	—	—	—	—	—	3	15	7	12	6	4	2	4	53
Sevens	—	—	—	—	1	4	5	4	2	1	1	—	1	19
United Estates ..	—	—	3	2	6	6	5	1	1	1	—	—	—	25
Vale Royal	—	—	1	—	2	3	7	6	6	6	4	1	4	40
Worthy Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average	0-6	0-1	2-6	7-6	14-6	15-5	19-2	9-8	12-6	6-5	3-9	1-9	5-5	899

TABLE VII
NO. OF FIELDS OR SECTIONS IN EACH ESTATE SHOWING p.p.m. MANGANESE IN LEAF DRY MATTER
FALLING WITHIN A PARTICULAR RANGE

Estates	0 to 10	11 to 20	21 to 30	31 to 40	41 to 50	51 to 60	61 to 70	71 to 80	81 to 90	91 to 100	101 to 110	111 to 120	121 and over	Total fields sampled
Appleton	—	—	—	—	1	5	4	2	2	2	1	1	4	22
Barnett	—	—	5	5	2	1	—	1	—	1	—	—	—	15
Bernard Lodge ..	—	3	7	14	12	8	15	9	2	3	2	2	1	78
Caymanas	—	7	44	30	12	9	6	2	—	—	—	—	—	110
Frome	2	9	8	15	10	6	3	5	4	1	1	1	3	68
Gray's Inn Central ..	—	—	5	1	4	3	—	3	2	4	—	—	2	24
Hampden	—	—	4	4	7	8	6	3	4	—	1	2	1	40
Holland	—	1	6	3	3	1	—	—	—	—	1	—	—	15
Innswood	—	1	1	2	4	6	3	5	2	1	—	1	—	26
Jamaica Sugar Estates	—	3	5	18	13	18	8	16	6	2	1	4	2	96
Long Pond	—	2	5	11	4	9	5	3	2	—	—	—	—	41
Monymusk	3	8	21	27	42	27	11	16	7	4	1	2	4	173
New Yarmouth ..	—	—	4	7	14	4	3	2	2	2	1	—	1	40
Richmond/Llandoverly	—	9	16	5	2	—	—	—	—	—	—	—	—	32
Rose Hall	3	8	5	1	2	—	1	—	—	—	1	1	1	23
Serge Island	—	4	9	4	9	6	4	4	2	—	3	3	5	53
Sevens	—	—	2	6	1	—	1	2	—	1	—	3	3	19
United Estates ..	—	1	5	2	5	3	3	2	1	1	1	1	—	25
Vale Royal	—	1	4	7	16	5	4	3	—	—	—	—	—	40
Worthy Park	2	9	1	3	2	—	1	2	—	—	—	—	—	20
Average	1-0	6-9	16-4	17-2	17-2	12-3	8-1	8-3	3-8	2-3	1-5	2-2	2-8	960

* As determined by H. Evans—Bookers Sugar Estates, Ltd.

TABLE VIII
NO. OF FIELDS OR SECTIONS IN EACH ESTATE SHOWING p.p.m. IRON IN LEAF DRY MATTER
FALLING WITHIN A PARTICULAR RANGE

Estates	0 to 20	21 to 30	31 to 40	41 to 50	51 to 60	61 to 70	71 to 80	81 to 90	91 to 100	101 to 110	111 to 120	121 to 130	131 and over	Total fields sampled
Appleton	—	—	—	2	1	8	6	5	—	—	1	—	—	23
Barnett	—	—	—	—	—	—	1	1	3	1	3	1	5	15
Bernard Lodge ..	—	—	—	—	4	18	18	7	6	11	9	3	4	80
Caymanas	—	—	—	—	6	16	24	17	19	7	2	4	15	110
Frome	—	—	—	—	4	17	26	13	4	2	—	—	—	66
Gray's Inn Central ..	—	—	—	3	6	5	3	4	3	—	—	—	—	24
Hampden	—	—	—	—	4	10	13	4	4	1	1	—	3	40
Holland	—	—	—	2	4	8	1	—	—	—	—	—	—	15
Innswood	—	—	—	1	11	8	6	—	—	—	—	—	—	26
Jamaica Sugar Estates	—	—	—	—	15	16	19	12	13	8	7	1	5	96
Long Pond	—	—	1	5	15	9	4	3	4	—	—	—	—	41
Monymusk	—	3	7	2	20	38	38	25	21	8	8	—	3	173
New Yarmouth	—	—	—	—	1	12	9	8	7	1	1	—	1	40
Richmond/Llandovery	—	—	—	—	18	10	3	—	—	—	—	—	—	31
Rose Hall	—	—	—	—	5	13	5	—	—	—	—	—	—	23
Serge Island	—	—	—	1	17	16	11	5	2	1	—	—	—	53
Sevens	—	—	—	—	2	10	6	1	—	—	—	—	—	19
United Estates	—	—	—	1	17	6	1	—	—	—	—	—	—	25
Vale Royal	—	—	—	1	5	19	7	3	2	1	—	1	1	40
Worthy Park	—	—	—	—	2	4	8	3	2	—	—	—	1	20
Average	—	0.3	0.8	1.9	16.4	25.3	21.8	11.6	9.4	4.3	3.3	1.0	4.0	(960)

Iron

The general range of iron contents is from 50 to 100 p.p.m., with a mean of around 60 to 70 p.p.m. Fe. These figures are low compared with British Guiana figures of 96 to 142 p.p.m.*—an observation again in keeping with the much greater acidity of British Guiana soils. The distribution of the figures is

interesting in that the effects of high soil calcium carbonate concentrations are not obvious—e.g., the calcareous soils of Frome, Rose Hall, Richmond Llandovery and parts of Caymanas did not produce samples of markedly low relative iron contents. The effects of high soil concentrations of calcium carbonate are apparently reflected mainly in the uptake of manganese.

(ii) Other elements

TABLE IX
NO. OF FIELDS OR SECTIONS IN EACH ESTATE SHOWING % SODIUM IN LEAF DRY MATTER
FALLING WITHIN A PARTICULAR RANGE

Estates	0 to 0.006	0.007 to 0.009	0.010 to 0.012	0.013 to 0.015	0.016 to 0.018	0.019 to 0.021	0.022 to 0.024	0.025 to 0.027	0.028 to 0.030	0.031 to 0.033	0.034 to 0.036	0.037 to 0.039	0.040 and over	Total fields sampled
Appleton	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Barnett	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Bernard Lodge ..	—	—	—	9	17	8	7	4	2	—	—	—	—	47
Caymanas	—	10	41	25	22	10	2	—	—	—	—	—	—	110
Frome	—	7	26	19	13	3	—	—	—	—	—	—	—	68
Gray's Inn Central ..	12	8	4	—	—	—	—	—	—	—	—	—	—	24
Hampden	2	8	5	13	8	1	2	—	1	—	—	—	—	40
Holland	15	—	—	—	—	—	—	—	—	—	—	—	—	15
Innswood	17	6	1	1	1	—	—	—	—	—	—	—	—	26
Jamaica Sugar Estates	11	13	26	15	6	5	5	4	2	2	1	1	5	96
Long Pond	—	—	1	2	3	4	8	6	5	4	5	3	—	41
Monymusk	14	22	23	18	20	21	11	8	7	10	3	9	7	173
New Yarmouth	—	1	6	17	9	2	3	—	1	—	1	—	—	40
Richmond/Llandovery	1	6	8	4	6	3	2	—	—	—	1	—	1	32
Rose Hall	1	8	3	3	1	1	—	2	—	—	—	1	3	23
Serge Island	20	17	7	6	2	—	—	—	—	1	—	—	—	53
Sevens	1	14	4	—	1	—	—	—	—	—	—	—	—	20
United Estates	20	3	2	—	—	—	—	—	—	—	—	—	—	25
Vale Royal	1	9	8	5	9	6	1	—	—	—	—	—	—	40
Worthy Park	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average	1.2	1.3	1.7	1.4	1.2	0.6	0.4	0.3	0.2	0.2	0.1	0.1	0.2	873

* As determined by H. Evans—Bookers Sugar Estates, Ltd.

TABLE X
NO. OF FIELDS OR SECTIONS IN EACH ESTATE SHOWING % MAGNESIUM IN LEAF DRY MATTER
FALLING WITHIN A PARTICULAR RANGE

Estates	0-000 to 0-100	0-101 to 0-130	0-131 to 0-160	0-161 to 0-190	0-191 to 0-220	0-221 to 0-250	0-251 to 0-280	0-281 to 0-310	0-311 to 0-340	0-341 to 0-370	0-371 to 0-400	0-401 to 0-430	0-431 and over	Total fields sampled
Appleton	—	—	5	9	8	1	—	—	—	—	—	—	—	23
Barnett	—	—	3	2	4	5	1	—	—	—	—	—	—	15
Bernard Lodge ..	—	2	12	18	18	11	7	4	6	—	—	—	—	78
Caymanas	—	1	8	23	33	22	15	2	—	1	—	—	4	110
Frome	4	11	20	17	5	4	2	3	—	—	—	—	—	66
Gray's Inn Central ..	—	—	4	9	7	4	—	—	—	—	—	—	—	24
Hampden	—	1	7	8	8	6	5	1	—	—	2	1	1	40
Holland	—	1	1	2	8	2	1	—	—	—	—	—	—	15
Innswood	—	3	5	14	4	—	—	—	—	—	—	—	—	26
Jamaica Sugar Estates	2	14	27	20	20	7	4	2	—	—	—	—	—	96
Long Pond	—	1	4	9	15	5	7	—	—	—	—	—	—	41
Monymusk	1	21	51	49	41	5	2	3	—	—	—	—	—	173
New Yarmouth	—	1	6	19	5	6	2	1	—	—	—	—	—	40
Richmond/Llandoverly	1	8	11	9	3	—	—	—	—	—	—	—	—	32
Rose Hall	2	4	3	9	2	2	1	—	—	—	—	—	—	23
Serge Island	—	1	—	6	4	8	11	8	9	6	—	—	—	53
Sevens	—	1	—	6	7	2	2	1	1	—	—	—	—	20
United Estates	—	2	7	7	7	2	—	—	—	—	—	—	—	25
Vale Royal	1	8	9	5	11	4	1	1	—	—	—	—	—	40
Worthy Park	—	1	3	6	3	4	2	—	—	—	—	—	—	19
Average	1.1	8.5	19.4	25.8	22.2	10.4	6.6	2.7	1.7	0.7	0.3	0.1	0.5	959

Sodium

Sodium is not an essential plant food element for most crops. The survey figures are of interest mainly in so far as they may reveal areas of relatively high uptake of the element associated with high concen-

trations of sodium salts in the soil. The high figure on parts of Monymusk and Jamaica Sugar Estates are explained by this. The high figures at Long Pond would appear to be abnormal and worthy of further examination, particularly in their relation to the uptake of calcium.

TABLE XI
NO. OF FIELDS OR SECTIONS IN EACH ESTATE SHOWING % CALCIUM IN LEAF DRY MATTER
FALLING WITHIN A PARTICULAR RANGE

Estates	0-00 to 0-15	0-16 to 0-20	0-21 to 0-25	0-26 to 0-30	0-31 to 0-35	0-36 to 0-40	0-41 to 0-45	0-46 to 0-50	0-51 to 0-55	0-56 to 0-60	0-61 to 0-65	0-66 to 0-70	0-71 and over	Total fields sampled
Appleton	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Barnett	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Bernard Lodge ..	—	—	—	—	3	4	11	10	14	4	1	—	—	47
Caymanas	—	—	—	3	—	14	29	30	23	8	1	1	1	110
Frome	—	—	—	—	—	3	5	8	21	14	8	6	3	68
Gray's Inn Central ..	—	—	—	—	—	—	3	2	4	8	4	2	1	24
Hampden	—	—	—	—	1	3	2	8	10	1	8	2	5	40
Holland	—	2	—	—	—	—	4	7	—	1	1	—	—	15
Innswood	—	—	—	—	—	2	4	17	3	—	—	—	—	26
Jamaica Sugar Estates	—	—	—	—	—	1	11	18	23	14	9	2	18	96
Long Pond	—	—	—	—	—	—	—	—	2	2	12	6	19	41
Monymusk	—	—	3	9	23	38	28	46	19	4	1	—	—	171
New Yarmouth	—	—	—	1	—	3	4	15	12	3	2	—	—	40
Richmond/Llandoverly	—	—	—	—	—	4	9	8	4	4	2	—	—	31
Rose Hall	—	—	—	—	1	3	1	7	2	1	2	4	2	23
Serge Island	—	—	—	—	—	—	4	13	12	15	5	3	1	53
Sevens	—	—	—	1	4	4	3	6	1	1	—	—	—	20
United Estates	—	—	—	—	—	—	1	6	9	2	3	3	1	25
Vale Royal	—	—	—	—	4	1	7	1	6	4	3	8	6	40
Worthy Park	—	—	1	1	1	4	6	5	1	1	—	—	—	20
Average	—	0.2	0.4	1.7	4.2	9.4	14.8	23.3	18.7	9.8	7.0	4.2	6.4	890

Magnesium

The majority of estates' cane have magnesium contents of between 0.10 and 0.26 Mg % leaf lamina dry matter, with the average between 0.16 and 0.19%. By comparison with an assumed critical level of about 0.10% Mg it seems improbable that Jamaica's sugar cane suffers from magnesium deficiency.

Calcium

The calcium uptake is generally high, varying principally between 0.35 and 0.60 Ca % dry matter, with a mean of around 0.40 to 0.45%. It is extremely improbable that calcium deficiency occurs. On the contrary, the high level of calcium uptake may well be a factor in suppressing the uptake of potash and interfering with the uptake of phosphate on some soils.

TABLE XII
NO. OF FIELDS OR SECTIONS IN EACH ESTATE SHOWING % POTASH IN LEAF DRY MATTER
FALLING WITHIN A PARTICULAR RANGE

Estates	0 to 0.70	0.71 to 0.80	0.81 to 0.90	0.91 to 1.00	1.01 to 1.10	1.11 to 1.20	1.21 to 1.30	1.31 to 1.40	1.41 to 1.50	1.51 to 1.60	1.61 to 1.70	1.71 to 1.80	1.81 and over	Total fields sampled
Appleton	—	—	—	—	—	2	3	7	6	3	1	—	1	23
Barnett	—	—	—	—	—	1	2	5	3	—	1	2	1	15
Bernard Lodge	—	—	—	—	4	4	4	3	5	16	8	12	24	80
Caymanas	—	—	1	1	6	12	12	20	24	11	14	3	6	110
Frome	—	—	—	—	—	1	4	4	5	7	14	11	22	68
Gray's Inn Central	—	—	—	—	—	2	4	7	5	3	2	1	—	24
Hampden	—	—	1	1	5	4	4	11	5	5	—	1	3	40
Holland	—	1	—	—	1	3	4	2	—	2	2	—	—	15
Innswood	—	—	—	—	—	—	4	11	4	3	1	2	1	26
Jamaica Sugar Estates	—	3	2	5	10	11	16	20	13	11	3	1	1	96
Long Pond	—	—	—	5	4	6	7	7	—	2	2	2	1	41
Monymusk	—	—	—	—	2	6	13	18	32	28	32	16	26	173
New Yarmouth	—	—	—	—	3	1	2	8	10	7	6	2	1	40
Richmond/Llandovery	—	—	—	—	2	3	2	5	8	5	7	—	—	32
Rose Hall	—	1	1	4	1	1	1	3	2	3	2	2	2	23
Serge Island	—	—	—	1	4	3	6	6	12	9	5	5	2	53
Sevens	—	—	—	1	1	2	—	5	4	3	2	—	2	20
United Estates	—	—	—	—	2	2	4	6	4	7	—	—	—	25
Vale Royal	2	3	2	6	3	15	4	4	1	—	—	—	—	40
Worthy Park	—	—	—	—	—	—	1	4	4	8	2	—	1	20
Average	0.2	0.8	0.7	2.5	5.0	8.2	10.1	16.2	16.0	13.6	10.8	6.2	9.7	964

TABLE XIII
NO. OF FIELDS OR SECTIONS IN EACH ESTATE SHOWING % PHOSPHATE IN LEAF DRY MATTER
FALLING WITHIN A PARTICULAR RANGE

Estates	0 to 0.30	0.31 to 0.32	0.33 to 0.34	0.35 to 0.36	0.37 to 0.38	0.39 to 0.40	0.41 to 0.42	0.43 to 0.44	0.45 to 0.46	0.47 to 0.48	0.49 to 0.50	0.51 to 0.52	0.53 and over	Total fields sampled
Appleton	—	1	3	3	4	1	3	3	2	1	2	—	—	23
Barnett	—	2	1	—	—	—	1	2	—	2	2	1	4	15
Bernard Lodge	—	—	—	3	4	5	3	8	4	2	8	8	35	80
Caymanas	—	—	1	1	10	11	19	14	10	11	14	7	12	110
Frome	5	1	1	6	5	12	7	2	5	4	4	3	13	68
Gray's Inn Central	1	1	—	3	2	4	1	3	2	4	3	—	—	24
Hampden	1	1	—	2	2	6	4	5	8	1	3	1	6	40
Holland	1	—	—	3	2	4	1	1	1	2	—	—	—	15
Innswood	—	—	2	2	—	2	—	—	4	6	3	4	3	26
Jamaica Sugar Estates	8	5	2	4	3	3	11	18	9	11	8	2	12	96
Long Pond	—	—	—	2	1	2	4	5	5	4	6	—	—	41
Monymusk	1	2	2	9	10	14	25	21	28	21	12	13	15	173
New Yarmouth	—	—	1	1	1	4	7	9	2	6	6	—	3	40
Richmond/Llandovery	3	5	4	4	7	4	2	2	—	—	—	—	1	32
Rose Hall	2	4	1	—	4	2	6	3	1	—	—	—	—	23
Serge Island	—	—	7	4	8	5	7	4	4	6	2	4	2	53
Sevens	—	1	2	1	3	4	3	—	3	—	3	—	—	20
United Estates	—	1	—	1	2	1	6	5	2	—	1	—	6	25
Vale Royal	3	1	2	2	4	7	3	8	5	3	—	2	—	40
Worthy Park	2	2	3	3	1	3	2	1	—	3	—	—	—	20
Average	2.8	2.8	3.3	5.6	7.6	9.8	11.9	11.8	9.9	9.0	8.0	4.7	12.9	964

Potassium

A comparison of the potash levels as revealed in Table XII and Fig. 17 compared with a similar analysis conducted in 1949 shows a general improvement in the uptake of this element. Whereas 50% of the samples fell below the threshold value of 1.3% K_2O in 1949, the figure was less than 30% in 1954. Parts of Vale Royal, Hampden, Jamaica Sugar Estates, Serge Island and Caymanas require increased application of potash.

Phosphate

The survey results are similar to those obtained in 1949, suggesting that the phosphate status of sugar cane has not changed significantly when considered alone. In the same interval, nitrogen nutrition has improved so that the time may be approaching when more general responses to superphosphate may be expected. Certainly, by comparison with the critical

limits suggested by field experiments, the general level of phosphate uptake appears inadequate. More precise information on this point will be obtained from the "dispersed block" fertilizer experiments being laid out during 1955.

Nitrogen

The nitrogen status of sugar cane as revealed by the survey is much improved compared with that indicated in 1949. There still remains room for considerable further improvement, if levels are to approach those considered optimum as a result of field experiments. The apparent discrepancy between the nitrogen levels obtained from the survey and those considered optimum from field experiments, needs examining, especially as the nitrogen treatments applied to fields generally do not differ greatly from the optimum as indicated by the yield results of field experiments.

TABLE XIV
NO. OF FIELDS OR SECTIONS IN EACH ESTATE SHOWING % NITROGEN IN LEAF DRY MATTER

Estates	0 to 0.90	0.91 to 1.00	1.01 to 1.10	1.11 to 1.20	1.21 to 1.30	1.31 to 1.40	1.41 to 1.50	1.51 to 1.60	1.61 to 1.70	1.71 to 1.80	1.81 to 1.90	1.91 to 2.00	2.01 and over	Total fields sampled
Appleton	-	-	-	-	-	3	3	4	3	3	3	3	1	23
Barnett	-	-	-	-	-	1	-	5	4	4	1	-	-	15
Bernard Lodge ..	-	-	-	-	2	5	6	14	19	17	9	7	1	80
Caymanas	-	-	-	-	-	1	3	12	19	30	22	10	13	110
Frome	-	-	-	-	-	3	9	7	13	17	8	8	3	68
Gray's Inn Central ..	-	-	-	-	-	-	-	7	4	5	3	3	2	24
Hampden	-	-	-	-	-	-	1	4	6	12	9	5	3	40
Holland	-	-	-	-	-	2	2	4	5	2	-	-	-	15
Innswood	-	-	-	4	2	5	6	6	1	1	-	1	-	26
Jamaica Sugar Estates	-	-	-	1	1	1	6	10	20	26	13	11	7	96
Long Pond	-	-	-	-	-	-	1	8	11	8	8	2	3	41
Monymusk	-	-	-	1	3	19	13	39	36	32	11	12	7	173
New Yarmouth ..	-	-	-	-	-	3	10	11	3	3	5	2	3	40
Richmond/Llandovery	-	-	-	-	1	-	6	9	11	4	-	1	-	32
Rose Hall	-	-	-	-	-	1	1	4	5	3	5	2	2	23
Serge Island	-	-	-	-	-	3	5	5	15	9	7	4	5	53
Sevens	-	-	-	1	1	4	2	3	6	3	-	-	-	20
United Estates ..	-	-	-	-	-	-	2	3	7	6	3	3	1	25
Vale Royal	-	-	-	-	-	4	2	4	3	5	12	3	7	40
Worthy Park	-	-	-	2	-	4	3	5	2	3	1	-	-	20
Average	-	-	-	0.9	1.0	6.1	8.4	17.0	20.0	20.0	12.4	8.0	6.0	964

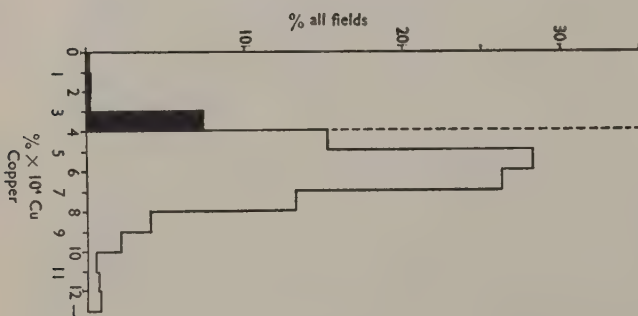


FIGURE 10

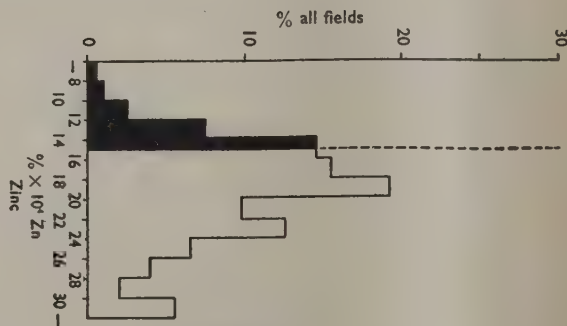


FIGURE 11

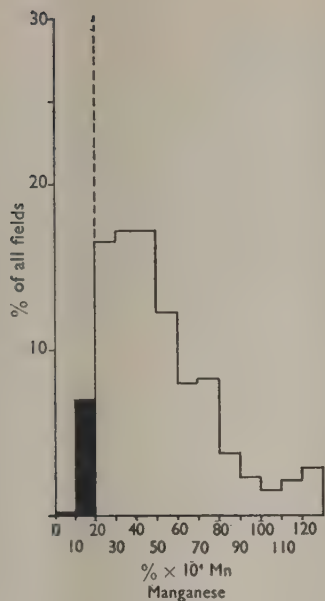


FIGURE 12

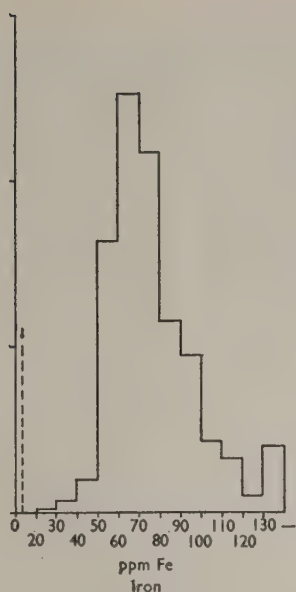


FIGURE 13



FIGURE 14

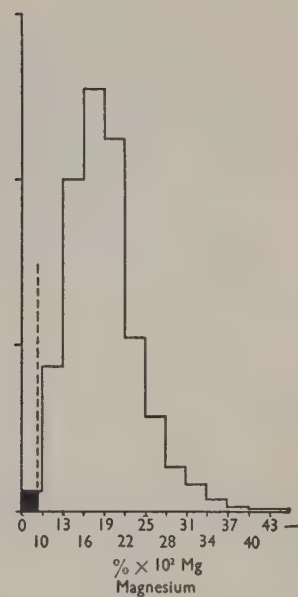


FIGURE 15

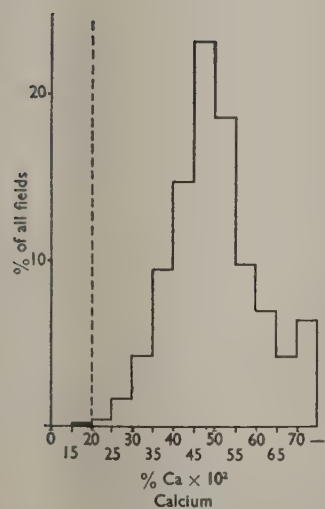


FIGURE 16



FIGURE 17

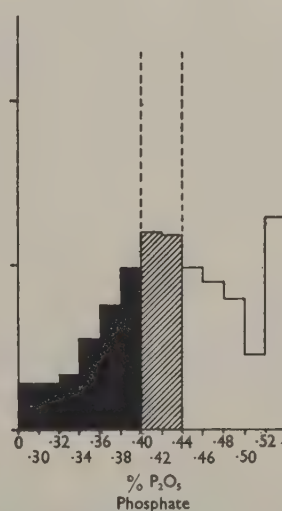


FIGURE 18

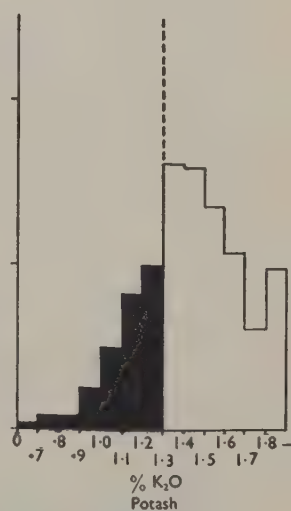


FIGURE 19

The trace element survey has offered a means of obtaining a quick picture of the areas, if any, in which trace element deficiencies may occur. We can now proceed to further studies on certain soils (both in field and greenhouse), in order to check the significance of relative low uptake in specific areas. It will be necessary to augment this work with a limited amount of nutrient culture work.

At the same time, the survey samples offered an opportunity of checking the major plant food status of sugar cane which, by comparison with similar figures obtained in 1949, has shown marked improvement.

G. VARIETIES

(a) The influence of variety upon yield

Figures of the cane yield per acre on estates available since 1936 show a gradual upward trend with the years, which trend is more uniform if year to year variations in climatic conditions, etc., are partly suppressed by studying the five year moving average figures of annual mean yield per acre. Table XV (p. 21) shows the per cent. of estates' cane acreage in "B" varieties including and excluding BH10/12, and the corresponding yields of cane per acre, are given as five year moving averages.

of BH10/12 by newer "B" varieties also accounted for a marked increase in yield on estates' land.

(b) The distribution of the main varieties

The percentage of the total acreage in estates' cane in different varieties is given in Table XIV of Appendix I, and is illustrated in Fig. 21. Although the percentage acreage under B41227, B42231 and B4362 has doubled since 1953, B34104 still occupied the largest acreage of any variety, nevertheless, the acreage in B34104 dropped from 50% of the total in 1952 to 26% in 1954. The variety is definitely on the way out. The limitation of output imposed

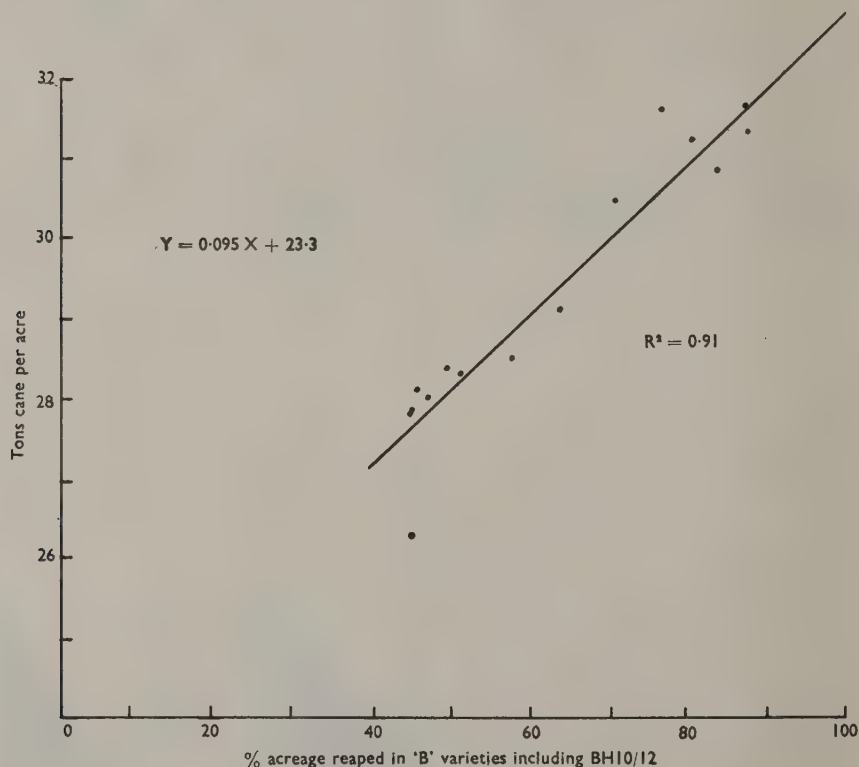


FIGURE 20

The relationship between TC/A per annum and the per cent. acreage reaped in "B" varieties (including or excluding BH10/12) is highly significant and linear. The curve suggests that the change in variety position over the years has accounted for 55% of the variation in mean yield per acre in the same period. This picture is however not entirely correct since much improvement in nutrition and cultural practices, including irrigation, has occurred simultaneously with variety change. Statistical analysis shows that the displacement

by quota considerations will reduce the area being replanted annually in the immediate future, and consequently, the elimination of B34104 will not be as rapid as is warranted by the results of field experiments.

The position of B3439 has also been affected. Between the years 1948 and 1953 more than one fifth of the total acreage was in this variety. The decline in its importance mentioned in the last Annual Report has become more marked. The variety is now giving

TABLE XV
THE RELATION BETWEEN "B" VARIETIES AND MEAN YIELD PER ACRE OF CANE
1936-54

Years	Tons cane per acre per annum	% acreage reaped in "B" varieties including BH10/12	% acreage reaped in "B" varieties excluding BH10/12
1936-40	26.3	45	—
1937-41	27.8	45	—
1938-42	27.8	45	—
1939-43	28.1	46	1
1940-44	28.0	47	4
1941-45	28.4	50	10
1942-46	28.3	52	18
1943-47	28.5	58	31
1944-48	29.1	64	44
1945-49	30.5	71	57
1946-50	31.6	77	69
1947-51	31.2	81	77
1948-52	30.8	84	82
1949-53	31.3	88	87
1950-54	31.6	88	88

way under pressure from the extension of B4362 and the expansion of bananas back on to original banana land which was devoted to cane during World War II and afterwards.

The importance of B37172 has remained the same, reflecting the peculiar suitability of this variety to the conditions prevailing at Jamaica Sugar Estates, and to a lesser degree, at Serge Island and Gray's Inn.

In Trelawny, Co331, Co421 and even POJ2878 continue to be grown on the poorest soils.

The relative importance of different varieties in the main ecological areas is given in Table XVI below:—

Wet West—Appleton, Barnett, Frome, Holland.

Dry North Coast—Hampden, Long Pond, Rose Hall, Vale Royal.

Irrigated—Bernard Lodge, Caymanas, Innswood, Monymusk, New Yarmouth, Sevens.

Wet East—Gray's Inn, Jamaica Sugar Estates, Serge Island.

Central—United Estates and Worthy Park.

The changing variety position is very evident from Table XVII, which sets out the variety plant acreage % total plant acreage for the last three crops.

The inability of B4362 and B41227 to withstand severe drought on poor soils militates against their rapid expansion on some areas of the north coast. In spite of the fact that the relatively poor juice of B41227 and the susceptibility of B4362 to over-ripening, limit their use at Jamaica Sugar Estates, nevertheless, B41227 is becoming the outstanding general purpose cane of Jamaica followed by B4362 on the better free-draining soils—which soils need not necessarily be light textured.

TABLE XVI
% ACREAGE UNDER VARIETIES FOR ECOLOGICAL AREAS

Ecological areas	B34104	B3439	B37161	B37172	POJ2878	Co421	Co331	B41227	B42231	B4362	Mixed and others
Wet West Estates ..	49	2	12	3	—	—	—	13	1	14	6
Dry North Coast ..	10	14	25	—	5	7	5	—	—	5	29
Irrigated Estates ..	26	26	3	—	—	—	—	13	13	8	11
Wet East Estates ..	2	9	—	67	—	—	—	—	—	12	10
Richmond/Llandoverly	4	52	18	—	—	—	—	4	—	4	18
Central Estates ..	21	15	2	2	—	—	—	12	6	23	19

TABLE XVII
VARIETY PLANT ACREAGE % TOTAL PLANT ACREAGE

Year	B3172	B3439	B34104	B37161	B37172	B41227	B42231	B4362	Co331	Co421	POJ2878	Others
1952	1	24	34	9	8	3	4	4	—	—	—	13
1953	1	17	10	11	7	14	9	17	—	—	1	13
1954	—	8	3	7	5	26	15	23	1	1	1	10

PERCENTAGE ACREAGE UNDER DIFFERENT VARIETIES

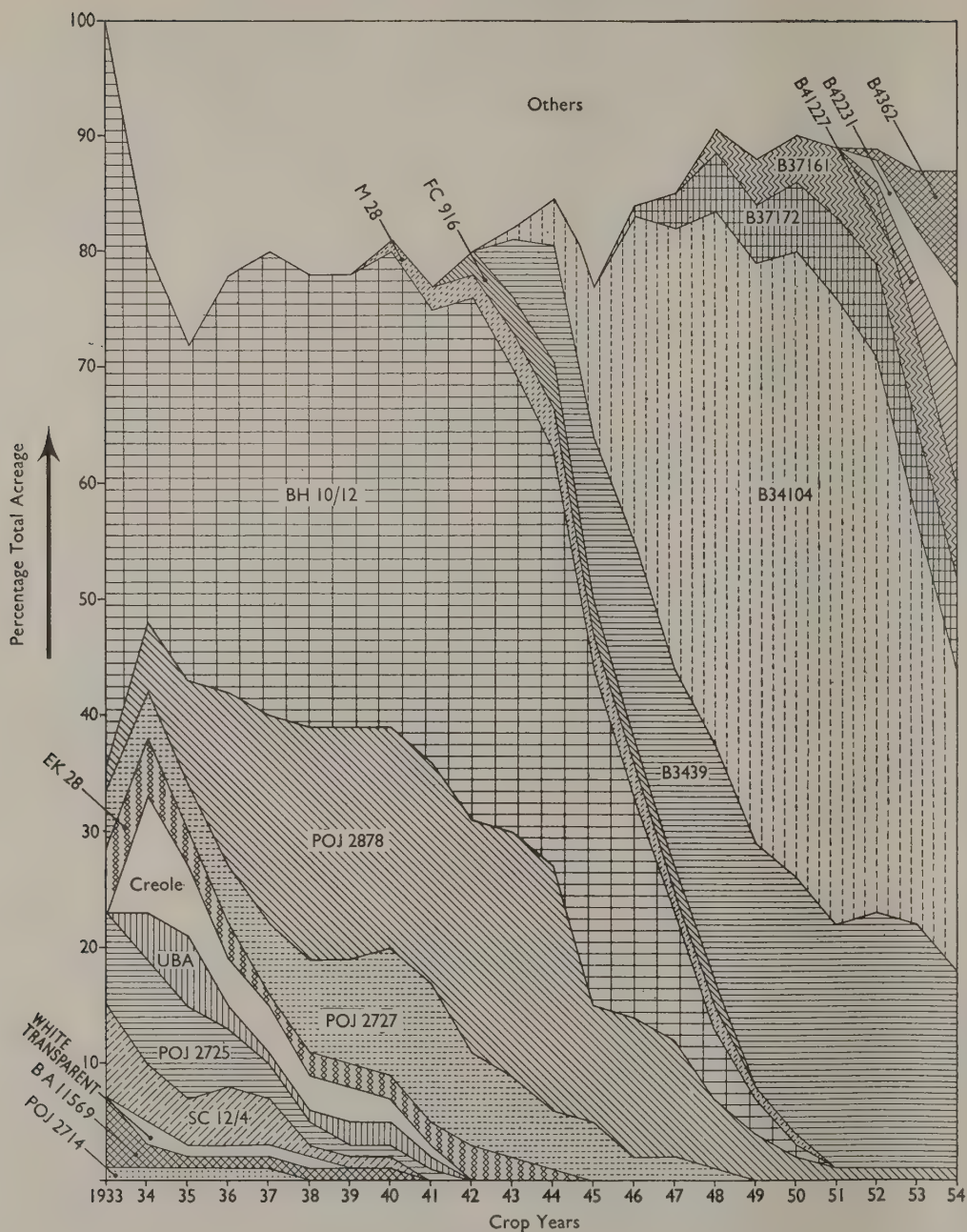


FIGURE 21

(c) **The productivity of the newer varieties**

The 1954 crop created new records of production. Table X, showing the tons cane per acre for varieties, Table XII giving the tons theoretical 96° sugar per acre for varieties, as well as Tables VIII and IX (all of Appendix I) showing the cwt. sugar per acre per month for varieties, all demonstrate the superiority of the newer "B" varieties. For example, take only the cwt. sugar per acre per month figures—B4362 and B41227, averaged over the industry, gave figures of 7.55 and 6.99 respectively as against an island average of 6.03 and a figure of 5.56 given by B34104. The Worthy Park figure of 8.30 bears testimony to the capacity of these varieties when cultivation and fertilization are near optimum. These outstanding performances have been achieved with little if any sacrifice in juice quality in the case of B41227 and with an appreciable improvement in juice quality in the case of B4362, B41227 and B42231 compared with other varieties (see Tables XI and XIA of Appendix I).

(d) **Variety experiments and their results**

The number and distribution of variety experiments are given in Table XVIII.

The number of variety experiments in operation increased from 78 in 1953 to 90 in 1954. The order of merit table (Table XIX) which sets out the results

of the experiments reaped during 1954 based upon the yield of sugar per acre, shows clearly why B41227, B4362 and B42231 have merited commercial extension.

(e) **The B47' series**

The varieties of this series have been reaped as 1st ratoons in the 81-lattice trials. B47419 which showed promise as a plant cane failed badly. B47258 performed well throughout the trials and particularly on the heavier, irrigated soils. B47251, B47306, B47310 and B47312 are being carried forward to final large scale variety trials.

(f) **The B48' series**

These varieties have proven of no value and have been discarded.

(g) **The B49' and B50' series**

Lattice experiments to be reaped as plants in 1955 will include these varieties. B49396 continued to impress at Long Pond, and B49353, B49355 and B50153 appear to be particularly vigorous.

(h) **The B51' series**

Numbers B5121, 5126, 5142, 5143, 5179, 51116, 51112, 51131, 51134, 51156, 51192, 51259, 51360, 51367 and 51374 did not develop mosaic after inoculation and were extended at Caymanas Nursery prior to being put into lattice trials. B51129 was re-imported.

TABLE XVIII
NO. AND DISTRIBUTION OF VARIETY EXPERIMENTS IN OPERATION DURING 1954

	FALL PLANTS			SPRING PLANTS		RATOONS				Total
	Planted 1952	Planted 1953	Planted 1954	Planted 1953	Planted 1954					
	Reaped 1954	To be reaped 1955	To be reaped 1956	Reaped 1954	To be reaped 1955	Reaped 1954				
						1st	2nd	3rd	4th	
Northern Division:										
Barnett	—	—	—	—	1	—	—	—	—	1
Hampden	—	2	—	—	—	—	—	—	—	2
Long Pond	1	1	4	1	—	—	—	—	—	7
Richmond/Llandoverly ..	1	—	1	—	1	—	1	—	—	4
Rose Hall	—	—	—	—	1	—	—	—	—	1
Vale Royal	—	—	1	—	—	1	2	—	—	4
Central Division:										
Appleton	1	1	1	—	—	1	—	—	—	4
Frome	—	—	—	—	5	2	2	—	3	12
Holland	—	—	—	—	—	—	—	—	—	—
Monymusk	1	1	2	1	—	5	5	—	—	15
New Yarmouth	2	—	—	—	1	1	—	—	—	4
Sevens	—	—	—	—	1	2	1	—	—	4
Eastern Division:										
Bernard Lodge	—	—	1	—	1	1	—	—	—	3
Caymanas	2	—	1	—	—	1	3	—	—	7
Gray's Inn Central	—	1	—	—	—	2	—	—	—	3
Innswood	—	—	—	—	—	2	—	—	—	2
Jamaica Sugar Estates ..	—	1	—	1	1	2	—	—	—	5
Serge Island	—	—	—	—	2	1	—	—	—	3
United Estates	—	—	1	—	—	2	—	—	—	3
Worthy Park	—	—	—	2	1	1	2	—	—	6
Totals	8	7	12	5	15	24	16	—	3	90

(i) The B52' series

Cuttings of eighteen varieties of this series were received. They are as follows:—

Variety	Parentage
B5235	B4362 x B43255
B5277	B37161 x B42231
B52107	B4145 x B41227
B52158	B4145 x B41227
B52162	B4362 x B4098
B52242	B43283 x B41227
B52253	B43283 x B41227
B52256	B43283 x B41227
B52257	B43283 x B41227
B52298	Co421 x B41211
B52306	Co421 x B41211
B52313	Co421 x B41227
B52315	Co421 x B41227
B52316	Co421 x B41227
B52321	Co421 x B41227
B52341	B37172 x B4098
B52371	B43283 x B41227
B52389	Co421 x B4098

(j) The B53' series

For the first time, several hundred named Barbados varieties were imported—404 varieties which had been given the prefix B53' in Barbados. In future, these will displace the various "500's" imported formerly. One hundred and nineteen varieties were discarded because of mosaic susceptibility and the balance were planted in nurseries at Monymusk, Frome, and Vale Royal. The first selection will be made during 1955.

(k) The B54' series

Two hundred and ninety varieties were received in October, of which 277 have been established.

(l) Lattice experiments

1st 500 (and B49's).—Lattice trials containing these varieties as well as the B47' varieties were reaped as first ratoons. It is encouraging that several varieties did consistently well throughout the island. The overall order of merit of varieties based upon the mean performance in the thirteen lattice experiments was as follows:—

Based on cane per acre	Based on sugar per acre
B41227	E162
E162	B41227
I216	I216
J284	F364
G483	B4362
E168	G483
I213	B37161
B47310	B47258
A26	B42231
B37161	I213
B4362	

These varieties are being carried forward into final variety experiments on the basis that each experiment

will be planted to the five varieties that did best on an island basis plus the five varieties which did best in the lattice experiments covering the district in which the variety experiments are being planted.

2nd 500 (and B50's).—One experiment only covering these varieties was reaped, and no variety impressed. The remainder of the lattice experiments will be reaped as plants in 1955. Some varieties in these, e.g., No. 52, show promise as being resistant to eye spot and mosaic.

3rd 500 (and B51's).—Twenty-nine of this group selected on their plant and 1st ratoon performance are being multiplied for inclusion in lattice trials during 1955.

4th 500 (and B52's).—The varieties were inspected as plants during 1954 and will be selected in 1955. Several appear promising.

(m) Seedlings raised in Jamaica

1951 seedlings.—The third stage nurseries at Caymanas, Frome, Jamaica Sugar Estates, Monymusk and Vale Royal were reaped as plants. The final selection will be made after the first ratoon selection in 1955. In all nurseries some seedlings have performed satisfactorily. In future the nursery selection will be improved by increasing the number of replicates to three.

1952 seedlings.—Nine selections have been planted in third stage nurseries and will be reaped in 1955.

1953 seedlings.—A total of 5,132 seedlings were planted at the Caymanas nursery.

(n) Varieties imported from sources other than Barbados

The following varieties were received through the Plant Quarantine Station in Trinidad after they had been given the anti-ratoon stunting heat treatment:—

British Guiana	—D62-43
Mauritius	—Ebene 1/37
India	—Co352, Co432
Cuba	—Gloria, CC101, CC102
U.S.A. (Mainland)	—CL41/223
Hawaii	—H38/2915, H38/4403, H39/3633 H39/7028, H44/3098
Puerto Rico	—PR905
Australia	—Q28, G176.

H. DISEASES

During the year there was fortunately no repetition of the Red Rot outbreak on B4362 at Jamaica Sugar Estates, nor were there many incidents of Pokkah Boeng damage. However, Eye Spot was again very conspicuous on Co331, Co421, B34104 and B37172. The disease was recorded on B41227 and B42231. The occurrence of Mottle Stripe on B4362 also seemed more general. Most attention was given to Ratoon Stunting, Mosaic, Chlorotic Streak and Eye Spot.

(a) Mosaic (virus)

The routine work of inoculating new importations and seedlings with mosaic was continued. As a result

of the procedure, six of the twenty-one varieties of the B51' series were found susceptible, and a final total of 119 varieties of the B53' developed mosaic symptoms. Of this total 48 showed susceptibility while still at Mandeville, and the remainder only when they had been planted in field nurseries. The material used for inoculation was juice extracted from B34104 leaves collected from the irrigated St. Catherine and Clarendon estates.

The original material of CP29/291, CP31/294 and Co281, imported for use in the strain-typing work, grew satisfactorily, and the first cuttings were germinated towards the end of the year for inoculation purposes. A number of inoculations were made but no results are as yet available. In connection with this work, a nursery is being established of mosaic infected plants of the different varieties collected from different parts of the island.

(b) Chlorotic Streak (virus)

Reports from other sugar areas of the depressing effects on yield of this disease suggested the advisability of determining the influence of chlorotic streak on cane vigour, under Jamaican conditions. As the incidence of the disease on B4362 seemed to be increasing steadily and rapidly, it was decided to use this variety in experiments for comparing the yields from healthy, healthy heat treated (i.e., tops immersed in water at 52° C. for at least 20 minutes), diseased, and diseased heat treated setts. Trials to be reaped in 1955 were planted at Worthy Park and Jamaica Sugar Estates. The diseased plots consistently appear to be backward in growth.

(c) Ratoon Stunting (virus)

The work carried out during the year was of several types:—

- (i) An experiment using Co421 at Long Pond and another using B37161 at Monymusk were planted to determine the effects of the following factors in all combinations:—

Healthy *vs.* diseased sett material.

Heat treating *vs.* no heat treating of sett material.

Inoculating with diseased juice *vs.* no inoculation of sett material.

The trials will be reaped in 1955. So far, observations suggest that at Long Pond some of the diseased plots are backward, but no internal symptoms have been seen.

- (ii) Plots of clean, disease suspected and disease inoculated clean setts of B34104 were planted at Appleton and Bernard Lodge.
- (iii) Field inspections were carried out, particularly in the Trelawny area, where the symptoms have been the most pronounced.
- (iv) A nursery of suspected plants was established for use in inoculating CP44/101 and Q28, varieties known to be rapidly and adversely affected elsewhere by the disease.

Observations indicate that the disease is probably present in Trelawny, e.g., at Hampden, vigorous tops of Co421 and tops taken from suspected plants when planted for comparison, produced normal plants from the one, and acutely stunted plants from the other. Nevertheless, it must be remembered that the difference in growth could in part be the result of the stronger planting material in the one case than the other. At Long Pond disease symptoms were recorded in cane grown from diseased Co421, but none in material grown from clean setts or diseased but heat treated setts.

In other parts of the island the situation was not as well defined. At Serge Island, for example, plants grown from "diseased" setts of B37172 produced a suggestion of internal symptoms but nothing more. They were slightly backward only in growth. B34104 fields at Bernard Lodge and Appleton which had had numerous stools showing symptoms in early ratoon stages, failed to give symptoms in later inspections. During the first inspection, many of the stools showing symptoms were growing in low spots, suggesting that the symptoms were probably associated with poor drainage.

(d) Eye Spot (*Helminthosporium sacchari*)

The regular outbreaks of this condition in the Annotto Bay and Hampshire Valley areas, make it desirable to obtain resistant varieties. The first step taken in this direction was to plant all the available parent varieties in a heavy Eye Spot district (at Vale Royal) in order to examine degrees of susceptibility. To support this study, the new importations of commercial varieties and promising seedlings will also be grown in areas with regular Eye Spot outbreaks so that their value in this respect may be assessed quite early in their career. So far, at least one of the more promising new introductions has shown high resistance.

I. PESTS

(a) The West Indian Cane Fly (*Saccharosydne saccharivora* Westwood Delphacidae)

The pest was of economic importance at Caymanas only. At the beginning of the 1954 crop the intensity of the fly built up and ratoon stubble was heavily infested, the fly migrating in from adjoining fields of tall cane. The infestation was the most intense experienced. As the cropping season was on, it was decided to attempt to control the pest commercially by dusting or spraying since all fields except fall planted ones would have to pass through the ratoon stubble or plant cane stage, and as time was a limiting factor, the problem was put to Pest Control Limited of Cambridge, England, who sent out an entomologist for the period March-April. Much of the information about the pest given below is based upon the work carried out by Pest Control Limited.

The egg stage.—The fly attacks cane of all ages. The eggs are laid in batches of two to fifteen (average 7) in slits which are usually cut in the midrib, and which cause a reddening of this part of the leaf. Normally,

eggs are laid on the underside of the leaf except in the case of the innermost rolled leaf, where they are deposited on the upper surface, and when a leaf hangs such that the morphologically upper surface is underneath, then egg laying takes place on the morphologically under surface.

The eggs are laid in batches, grouped in slits, and enormous numbers may be laid on a single leaf, e.g., nearly 300 discernible egg slits averaging seven eggs per slit have been counted on a single leaf. The slit mouths, when newly made, are covered with waxy threads deposited by the female fly.

The egg measures 0.7×0.2 mm. and is cigar-shaped, changing in colour from being translucent and colourless with a yellow region at the exterior end when newly laid, to yellow as hatching is approached. The eyes of the developing nymph become visible as two dots as the egg matures. Data show that the incubation period between oviposition and hatching is at least eleven days and field records show that it can be a few days longer than this—up to seventeen days. The hatching behaviour of egg masses suggests that oviposition occurs over a period of several days, but that within this period of between five and nine days, days of particularly heavy oviposition occur. These observations are borne out by later field observations on changes in the adult population.

The nymph stage.—The insect passes through five nymphal stages, easily identified by the morphology of the third pair of legs. Soon after hatching, the nymphs form colonies on the underside of the lamina, not the midrib, and arrange themselves in regularly spaced rows, the long axis of the body being parallel to the long axis of the leaf. This habit of "gregarious immobile association" applies to the second and third instar nymphs particularly. The fourth and fifth instar nymphs move about on the leaf surface and the last stage nymphs commonly migrate into the "funnel" where they feed on the morphologically upper surface of the youngest two leaves. Nymphs of all stages are active when disturbed. They feed mainly on the underside of leaves and void quantities of honeydew which falls on the leaves below. Cane of all ages were found capable of supporting large nymphal populations.

The colour of nymphs changes from being yellow for the first to third instar to light green for the fourth and fifth instar. The waxy "tail" is a common feature of the nymphs, but it is not a part of the body proper. The newly hatched nymphs are 0.8 mm. long whilst the fifth instar nymphs vary between 3 and 5 mm. in length and are more bulky than the adult fly. The metamorphosis from hatching to adult fly occupies about 28 days.

The adult fly.—Field observations suggest that the period between final moult and the laying of eggs is only a few days. The life of the adult fly was estimated as being somewhat greater than two weeks and the total egg laying period to be but little less, whilst the total number of eggs laid per female is probably considerably in excess of 100.

The female flies are bulkier than the males and are easily distinguished. The female possesses a powerful serrated ovipositor and excretes a waxy material from the tip of the abdomen, which shows as a tuft of filmy white threads. Copulation is not restricted to any part of the day and takes place on either side of the plant leaf. Egg laying also occurs at all times of the day but more commonly when the flies are very active.

The adult fly is greenish yellow in colour, 5 to 6 mm. long and 2 mm. wide. It is an active insect, particularly during the still warm conditions which occur about two hours after sunshine in March and April. The flies rise in a cloud when a heavily infested stool is disturbed. At night or during high winds, the fly is sluggish. The adult flies of both sexes are found on the underside of leaves and in the funnel of the youngest leaves. They tend to be gregarious, a hundred or more often occupying one small cane tiller.

Damage caused by the cane fly.—Egg laying damages the midrib area of cane leaves, causing red discolouration and gumming of the vascular system. The nymphs suck sap from the leaf lamina as do the adult flies, particularly in the young rolled leaves, and although the sap extracted must be considerable in a heavily infested leaf, no evidence of "burn" or "scorch" arising from feeding has been noticed. The honeydew sprayed by the nymphs coats the upper surface of lower leaves and supports the growth of sooty mould fungus (*Capnodium*) which spreads rapidly and can become so intense as to occur as a continuous thick film, seriously reducing photosynthesis. In extreme cases, the adult leaves die prematurely and all but the top five leaves are black.

In young "sprouts" the main damage arises from the destruction of the tissues of the midrib, which results in a shrivelling of the leaves. In older cane loss arises from the effects of the sooty mould coating upon the photosynthetic activity of the leaves. The ratoon sprouts or plant cane shoots in fields surrounded by tall cane are most susceptible to attack.

Varieties show varying degrees of susceptibility to infestation though no variety was seen to be immune from attack. The damage from heavy nymphal and sooty mould infestation was worst on leafy, succulent varieties such as B4362, M28 and FC916, whilst varieties which shed their trash easily such as B3439 did not appear to suffer to the same extent, especially in the older cane. The narrow leaved B42231 was found not to develop sooty mould infection as readily as the broader leaved varieties. Unfortunately, these variety deductions are inevitably confounded to an unmeasurable degree with field position.

The population and migration of cane fly.—The population of the insect is characterised by waves which vary between zero and heavy populations, with periods of six to eight weeks between peaks. It was noted that the migration on to young cane shoots coincided with the period of adult fly increase, following the period of rapid decrease in final instar nymphs, the migration in turn leading to a great increase in the egg population of the young cane. Fields caught

in a young stage during periods of adult fly increase, suffer severely, whilst others may escape for nearly a month and these are factors to be considered when timing chemical applications.

Experimental insecticide applications.—Fields of grown cane fogged with gamme B.H.C. (using a T.I.F.A.) in early March benefitted little, if any, and were still heavily infested at the end of the month. B.H.C. dusting (40–50 lbs. 5% technical B.H.C. per acre) also did not give effective control of an increasing nymphal infestation.

Spraying trials were carried out against the nymphal stages particularly, using D.D.T., B.H.C., Aldrin, Deildrin, Endrin and Schradan. D.D.T. proved persistent and effective provided that the undersides of the leaves were covered. Better results against adults were obtained by spraying at or after the peak of a population wave, than before it, whilst flies were still migrating and building up on the young ratoon fields.

Trials were also carried out with a P.C.L. "Field-master" high/low volume 100-gallon power sprayer drawn and powered by a D-2 Caterpillar tractor. Using rates of 1 to 1½ lb. D.D.T. per acre in up to 133 gallons of spray, effective reduction in fly populations (of the order of 88%) were obtained on young ratoon cane up to one month old. The control was obtained after the population build-up on these fields appeared to have stopped. If such spraying is to become a permanent feature of estate operations, a tractor mounted spraying unit would be less affected by ground unevenness caused by irrigation ditches. Hand spraying using knapsack equipment and D.D.T. emulsion spray (25% D.D.T. emulsion) was also effective.

General recommendations for cane fly control using chemicals.—In old cane, chemical treatment (except possibly by fogging or aerial methods) is impracticable although such cane from the age of three months up to reaping may form a breeding ground for flies of considerable importance, depending on the leafiness of varieties.

If the population in mature cane follows waves similar to those occurring on young cane during March/April, reaping should be timed to coincide with minimum adult populations, when all the fly will be present as nymphs and eggs and will be destroyed

with the drying and/or burning of the trash at reaping. Provided the trash and tops dry quickly, burning trash would seem unnecessary.

The weakest stage of the life cycle is the early nymph and it is against this, as it occurs on the leaf and hatches from the egg, that residual contact insecticides should be directed, also to the adult flies, especially during the decline of a population wave.

Sprays of 1 to 1½ lb. D.D.T. per acre in 60 to 80 gallons of spray for knapsacks, and 100 to 150 gallons for the machine spraying, should be applied so as to give, where possible, underleaf coverage. One or two sprayings during the first two months of growth from the ratoons are considered likely to be sufficient.

Biological control.—The Commonwealth Institute of Biological Control in Trinidad co-operated in sending potentially useful insects, which were released in cane fly areas at Caymanas by the Plant Protection Officer (= Entomologist) of the Jamaica Department of Agriculture. The insects introduced were *Pseudogonatopus* obtained from Trinidad (a *Dryinid* which parasitises the nymph adults in Trinidad) and *Cytorhinus mundulus*, an egg predator from Hawaii. The introduction of the latter was only made possible by the kind help and co-operation of the Experiment Station of the Hawaiian Sugar Planters' Association. No evidence has been obtained that the introduced insects are in fact becoming established.

(b) Small moth borer (*Diatraea saccharalis*) survey

A survey was carried out to determine the degree of infestation of the small moth borer on all estates in such a manner that the conclusions drawn were statistically valid. About a tenth of all fields on each estate was sampled and more than 700 samples were taken. Each sample consisted of 100 stalks if the field was ten acres or less and 150 if the area of the field was greater than ten acres. The number of joints of each stalk was counted, the stalk split and the number of bored joints recorded. The important results are given in the tables below.

It is not easy to define areas of degrees of borer intensity as the figures for each estate are confounded with varieties. For example, there can be little doubt that Caymanas, Bernard Lodge, Hampden, Worthy Park, Monymusk and Frome showed relatively high infestation because they grew a larger area of varieties

TABLE XX
% JOINT INFESTATION BY ESTATES

Estates	% infest.	Estates	% infest.	Estates	% infest.
Caymanas	6.0	Vale Royal	3.7	Sevens	2.0
Bernard Lodge	5.2	Holland	3.3	Richmond-Llandoverly	1.9
Worthy Park	4.6	Long Pond	3.2	New Yarmouth	1.5
Rose Hall	4.3	Jamaica Sugar Estates	2.7	Appleton	1.2
Hampden	4.3	United Estates	2.3	Barnett	0.8
Frome	4.3	Gray's Inn Central	2.1	Serge Island	0.8
Monymusk	4.1	Innswood	2.1	AVERAGE	3.4

which suffered more from borer attack. On the other hand, some of these estates also gave high figures for B34104 which is usually accepted as not being a highly infested variety, e.g., Bernard Lodge—7·8%, Caymanas—5·3%, Frome—4·0% and Monymusk 8·1%.

Germination counts were taken about six weeks after planting, and in every trial where organo-mercurial treatment resulted in increased germination there was an accompanying increased vigour. In one trial only, no benefit accrued from fungicide treatment,

TABLE XXI
% JOINT INFESTATION BY VARIETIES AND CLASSES

Varieties	Fall plants	Spring plants	1st ratoons	2nd ratoons	3rd ratoons	Old canes	Averages
B3439	0·8	1·8	1·7	1·7	2·2	2·5	2·0
B34104	1·2	2·0	3·1	2·6	2·3	3·2	2·9
B37161	5·7	3·6	3·3	3·4	4·8	4·5	4·3
B37172	2·9	1·0	1·1	1·5	1·0	2·5	1·6
B41227	3·2	3·1	5·2	3·5	0·7	0·7	3·6
B42231	4·4	2·5	3·6	2·7	2·3	1·4	3·7
B4362	6·1	3·7	5·8	4·2	4·4	4·6	5·1
POJ2878	5·9	5·4	12·5	—	1·8	3·5	4·9

The figures show that B4362 and B37161 were the most severely infested varieties, the least infested being B3439 and B37172. There was no real difference between borer percentages for spring plants and ratoons, and the degree of borer intensity remained fairly constant through successive ratoons. Generally speaking, fall plants were more heavily infested than spring plants and ratoons. The notable exceptions to this generalisation were B3439 and B34104 and in each of these cases the borer infestation estimate was not as reliable because only four fields of B3439 and one field of B34104 were sampled as fall plants.

Effect of borer intensity on juice quality.—An investigation conducted at Monymusk demonstrated that there is an association between percentage joint infestation and drop in juice quality. The relationship is given by the equation $\bar{Y} = 0.23X + 3.73$ where $\bar{Y}$ = % drop in juice quality and X = % borer infestation, and was obtained for borer infestation ranging from 3 to 30%.

The coefficient of X , viz., 0.23, denotes that for every 1% borer infestation there is an attendant 1% drop in juice quality. If this association holds true for the rest of the island, then there is a 0.78% drop in juice quality for the overall 3.4% borer infestation. The estimated loss of sugar from sugar estates (production approximately 220,000) is about 1,700 tons sugar as a result of reduction of juice quality alone from borer attack. If we assume an average price of £30 per ton sugar, the loss is of the order of £50,000.

J. CULTURAL AND OTHER PRACTICES

The number and distribution of experiments of this nature in operation during 1954 are given in Table XXII. (p. 30.)

(a) Preservation of cane setts

Seven trials were laid out to evaluate the effect on germination of treating cane setts with organo-mercurials. Five of these trials were planted during the fall and two during the spring, four being laid out on heavy clay soils and three on light sandy areas.

indeed there appeared to be a depression in germination of B4362. This was a fall planted trial on a light sandy area where land preparation and subsequent rains were conducive to good germination. The other spring planted trial on light soil showed little benefit to organo-mercurial treatment.

It would appear that the greatest gain from fungicidal treatment is in fall plants on heavy land, particularly under conditions of poor natural drainage and where land preparation is not thorough due to heavy rains. Marked improved germination was noted in every case where experiments were conducted under such conditions.

No experiment was carried out in the very dry areas. This will be done during the coming crop when a new comprehensive series of trials is to be laid out.

(b) Spacing

Three trials were reaped to determine the optimum number of tops per acre; and one to note any differences in yield due to varying the widths of row. The results to date support the view that a population of 8,000 tops per acre is superior to one of 5,000 tops per acre. In the one trial on width of row, which was conducted on a dry area estate, 3-ft. rows were tested against 4-ft. rows on B41227, B4362 and Co331. In every case for the plant crop there was an increased yield from the 3-ft. rows over the 4-ft. rows—8% for B41227, 8% for B4362 and 7% for Co331.

(c) Drainage

The effects of drainage were tested on two experiments. In one case in an area of heavy rainfall and medium soil, the yields suggest that a 10% increase may be expected from adequate drainage. In the other trial, more closely spaced drains than is the standard practice gave increased yields of only 4% in ratoons.

K. CHEMICAL LABORATORY

Laboratory work dealt with the analysis of samples of cane leaf material in connection with the trace

TABLE XXII

	FALL PLANTS			SPRING PLANTS						TOTAL	
	Planted 1952	Planted 1953	Planted 1954	Planted 1953	Planted 1954	RATOONS					
	Reaped 1954	To be reaped 1955	To be reaped 1956	Reaped 1954	To be reaped 1955	Reaped 1954					
						1st	2nd	3rd	4th		
Northern Division:											
Barnett	-	-	-	-	-	-	-	-	-	-	
Hampden	-	-	-	-	-	-	-	-	-	-	
Long Pond	-	-	-	-	1	-	-	-	-	1	
Richmond-Llandovery	-	-	1	-	1	-	-	-	-	2	
Rose Hall	-	-	-	-	1	-	-	-	-	1	
Vale Royal	-	-	-	1	1	-	-	-	-	2	
Central Division:											
Appleton	-	1	-	-	1	1	-	-	-	3	
Frome	-	-	2	2	2	-	-	-	-	6	
Holland	-	-	-	-	-	-	-	-	-	-	
Monymusk	-	-	-	-	1	1	1	-	-	3	
New Yarmouth	-	-	-	-	-	-	-	-	-	-	
Sevens	-	1	-	-	-	-	-	-	-	1	
Eastern Division:											
Bernard Lodge	-	-	-	-	-	-	-	-	-	-	
Caymanas	-	1	2	-	-	-	-	-	-	3	
Gray's Inn Central	-	-	-	-	1	-	-	-	-	1	
Innswood	-	1	-	-	-	-	-	-	-	1	
Jamaica Sugar Estates	-	-	-	1	1	-	-	-	-	2	
Serge Island	-	1	-	-	1	-	-	-	-	2	
United Estates	-	-	-	-	-	-	-	-	-	-	
Worthy Park	-	-	-	-	1	-	-	-	-	1	
Totals	-	5	5	4	12	2	1	-	-	29	

element and major element plant food survey of sugar estates. Effort was also spent in analysing soil samples related to producing soil available nutrient surveys of sugar estates' land.

Miscellaneous samples of soil and leaf material taken by estates' personnel were dealt with as well as a

miscellany of samples taken in connection with the Department's variety and fertilizer experiments. Sugar samples representative of raw sugar shipped in bulk were also analysed. An analysis of the work is given in Table XXIII.

TABLE XXIII

A CLASSIFICATION OF THE DETERMINATIONS DEALT WITH IN THE LABORATORY

1. PLANT LEAF MATERIAL:

(a) Major and trace element survey (leaf dry matter)

N	P	K	Ca	Mg	Na	Mn	Fe	Cu	Zn	Total
964	964	964	890	959	893	960	960	958	897	9,409

(b) Miscellaneous

N	P	K								
209	140	184	..	..	..	..	..	..	..	533

2. FLAME PHOTOMETER POTASH DETERMINATIONS FOR ESTATES:

Frome:	leaf, acid digests	403
Jamaica Sugar Estates:	soil, acetic acid extracts	393
		796

3. SOIL:

pH	Ca	CaCO ₃	P ₂ O ₅	K ₂ O						
70	54	54	60	60	..	..	..	..	..	298

4. CANE STALK MATERIAL 2,742

5. SUGAR SAMPLES 294

6. MISCELLANEOUS 180

Grand total 14,252

L. MISCELLANEOUS

Factors affecting cane quality

Certain of our cane areas are known to have notoriously poor juices. Gray's Inn Central is perhaps the worst area in this respect. Work has been commenced to study changes in cane composition at Gray's Inn as affected by varieties and time of the year. The present poor juices have been shown to be related in part to late tillering as the data in Table XXIV show.

The importance of suppressing later tillering by closer planting and/or growing erect varieties as well

as the growing of cane to an age when tillers are ripened, is worth examining further.

M. ACKNOWLEDGEMENTS

The keen manner in which all estates' personnel helped with the laying out and reaping of experiments is gratefully acknowledged, as is the co-operation which was so freely given by the Research Officers of Bernard Lodge, Frome, Jamaica Sugar Estates, Monymusk and Worthy Park. The assistance rendered by Caymanas in the early stages of variety selection was particularly helpful.

TABLE XXIV
THE RELATION BETWEEN TILLERING AND JUICE QUALITY

No. of joints/stalk	No. of stalks % total	TC/TS of stalk	Derived TC/TS for combination of stalks (No. of joints per stalk in brackets)
27-31	12.5	9.56	9.56 (27-31)
24-26	23.7	9.60	9.59 (24-31)
21-23	16.5	10.65	9.88 (21-31)
18-20	15.7	10.77	10.05 (18-31)
15-17	5.6	13.92	10.24 (15-31)
12-14	7.2	29.57	11.24 (12-31)
9-11 (sucker like)	4.4	24.93	11.57 (9-31)
6-8 (suckers)	6.8	46.08	12.40 (6-31)
Less than 6 (suckers)	7.6	46.08	12.40 (6-31)

APPENDIX I CANE YIELD SURVEY

TABLE I
ISLAND CANE CROP FOR PAST TEN YEARS

Crop year	CANE GROUND						
	Total tonnage	% increase or decrease on previous crop	Tons purchased	% increase or decrease on previous crop	Tons estates	% increase or decrease on previous crop	Purchased cane % total
1944-45	1,323,171	— 0·82	419,215	—10·06	903,956	4·14	32
1945-46	1,660,234	25·47	536,631	28·01	1,123,603	24·30	32
1946-47	1,629,182	— 1·87	506,082	— 5·69	1,123,100	— 0·04	31
1947-48	1,882,181	15·53	518,604	2·47	1,363,577	21·41	28
1948-49	2,212,220	17·53	637,346	22·90	1,574,874	15·50	29
1949-50	2,474,754	11·87	764,054	19·88	1,710,700	8·62	31
1950-51	2,425,748	— 1·98	765,814	0·23	1,659,934	— 2·97	32
1951-52	2,468,902	1·78	819,371	0·70	1,649,531	— 0·63	33
1952-53	3,133,745	26·93	1,175,056	43·41	1,958,480	18·73	37
1953-54	3,503,788	11·81	1,380,096	17·45	2,123,692	8·44	39

In the above table the tonnages are for cane actually ground in the factories. They include cane, the juice from which was sent direct to the distilleries for rum manufacture.

TABLE II
ACREAGE REAPED, CROPS 1945-54

Estates	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954
Appleton	—	538·00	574·75	569·75	1337·75	1301·25	1217·25	1538·15	1535·50	2028·50
Barnett	595·00	675·00	815·25	838·75	781·00	790·75	852·25	785·50	817·00	834·25
Bernard Lodge	2268·59	1956·50	2169·90	3332·16	4214·10	4357·74	4780·00	5060·80	4677·75	4925·15
Caymanas	3008·75	2064·50	2181·25	2708·75	2564·75	2596·90	2719·50	2379·25	2384·50	2963·25
Frome	6066·03	6441·00	6552·02	6999·34	7268·40	7971·02	8686·58	8975·34	9774·13	10099·65
Gray's Inn Central	910·00	947·00	1354·25	1636·25	1801·75	1933·50	1872·50	1903·25	1956·00	1953·75
Green Park	317·00	479·00	464·00	458·00	452·75	—	—	333·00	600·25	—
Hampden	1324·00	1259·50	1454·00	1483·50	1616·00	1566·00	1706·00	1847·00	2112·00	2443·25
Holland	517·50	473·00	457·75	537·75	607·25	740·50	825·50	895·50	1017·75	1107·75
Innswood	1563·00	1682·50	1737·00	1837·00	1874·00	1894·48	2065·00	2208·25	1808·75	2168·25
Ironshore	651·00	660·25	625·25	628·25	687·50	744·00	751·50	—	—	—
Jamaica Sugar Estates	2498·23	2564·26	2473·67	2533·33	2544·17	2975·80	2884·34	2914·36	2938·42	3136·68
Long Pond	937·00	1024·50	1226·50	1222·50	1617·00	1722·00	1841·75	1824·00	1802·50	1845·75
Monymusk	4051·50	4905·60	5016·75	6988·25	8675·75	11355·75	11995·75	12730·25	12962·50	13667·50
New Yarmouth	—	—	—	1984·65	2463·70	2385·80	3346·55	3751·55	3534·20	3747·25
Richmond/Llandoverly	1022·00	950·50	1032·50	1067·25	1229·75	1322·25	1496·75	1429·00	1461·25	1481·50
Rose Hall	1096·00	1118·00	1108·50	1101·50	1109·50	1114·00	1151·75	1190·25	1231·00	1291·25
Serge Island	1162·25	1073·00	1136·75	1161·75	1124·50	1182·00	1227·50	1210·50	1288·00	1347·25
Sevens	859·35	1095·38	1253·63	1431·54	1482·66	1634·53	1584·33	1850·85	2095·49	2106·56
United Estates	1194·25	1258·00	1559·00	1345·25	1410·75	1394·62	1597·43	1925·88	1747·15	1948·45
Vale Royal	1467·75	1533·25	1549·75	1614·00	1649·75	1634·50	1766·25	1769·00	1977·25	2125·50
Worthy Park	1022·87	1095·55	1222·14	1269·64	1218·36	1222·70	1146·07	1160·55	1195·00	1272·92
Total	33578·48	34785·79	37083·86	43996·41	48211·14	52340·09	55514·55	58212·33	59316·39	62494·41
* Bog	681·75	529·00	591·00	—	—	—	—	—	—	—
Kew	459·00	462·50	428·25	435·75	480·00	—	—	—	—	—
Raheen	724·75	No return	No return	811·50	—	—	—	—	—	—
Total	1865·50	991·50	1019·25	1247·25	480·00	—	—	—	—	—

* Bog amalgamated with Monymusk, Raheen with Appleton and Kew operating as cane farmers.

TABLE III
TONS CANE PER ACRE FOR CROPS 1945-1954 ALSO TEN YEAR AVERAGE

Year	Apple- ton	Barn- nett	Bern- ard Lodge	Cay- manas	Frome	Gray's Inn Cent.	Green Park	Hamp- den	Hol- land	Inns- wood	Jamaica Sugar Estates	Long Pond
1945	—	25.34	30.03	33.63	26.23	32.48	17.70	19.06	17.13	26.66	26.40	17.42
1946	21.10	29.49	35.98	33.94	34.15	40.06	18.31	18.89	17.03	28.62	40.21	16.16
1947	21.50	30.35	28.46	37.50	38.13	38.28	8.70	14.67	30.89	29.72	37.97	13.02
1948	20.50	29.19	38.56	31.06	31.15	34.51	15.78	20.62	26.73	26.14	35.88	16.56
1949	21.97	28.60	32.39	32.26	37.34	36.32	12.99	19.59	29.51	34.06	45.25	16.87
1950	26.51	34.83	39.07	37.88	34.49	29.79	—	21.27	31.48	34.04	33.64	20.66
1951	23.78	30.45	35.56	34.12	30.58	27.59	—	26.10	25.83	32.21	35.90	20.29
1952	15.87	29.37	28.45	31.48	30.34	30.84	16.18	20.31	20.06	28.18	33.75	17.34
1953	26.06	32.68	29.71	35.21	35.29	31.34	15.49	25.48	30.19	34.96	39.87	25.33
1954	34.27	35.39	30.98	41.71	35.80	32.83	—	23.06	31.94	33.45	36.92	21.29
10 year average	24.64	30.74	32.88	34.93	33.50	32.86	17.20	21.07	27.22	30.91	36.47	18.97

Year	Mony- musk	New Yar- mouth	Rich- mond/ Lland- overy	Rose Hall	Serge Island	Sevens	United Estates	Vale Royal	Worthy Park	Island average	Total acres
1945	37.84	—	20.97	19.57	23.48	35.20	23.69	16.52	26.24	26.47	33,579
1946	40.88	—	27.04	21.36	31.32	34.43	30.22	17.66	33.91	31.55	34,786
1947	34.51	—	22.33	14.81	31.07	28.37	25.96	18.46	23.60	29.70	37,084
1948	39.66	42.08	25.10	20.04	29.35	28.94	26.12	20.86	28.85	31.06	43,996
1949	40.78	33.56	32.02	21.36	32.16	33.72	25.01	19.21	27.56	32.69	48,211
1950	35.37	34.95	29.52	21.65	28.22	35.89	28.27	21.41	31.91	32.59	52,340
1951	30.93	34.26	23.91	21.22	25.97	33.08	26.05	22.64	22.79	29.90	55,515
1952	30.16	31.30	29.28	20.85	24.21	30.12	23.51	24.98	22.95	28.34	58,212
1953	36.87	34.21	24.81	18.41	31.74	37.18	30.97	27.97	35.52	33.04	59,316
1954	37.10	35.35	36.06	23.42	31.39	35.11	33.52	24.48	37.41	33.95	62,494
10 year average	35.73	34.65	28.47	20.31	28.89	33.36	27.50	21.75	29.16	31.26	—

TABLE IV
TONS CANE PER TON 96° SUGAR FOR 1948-1954

Estates	1948	1949	1950	1951* (theoretical)	1952 (theoretical)	1953 (theoretical)	1954 (theoretical)
Appleton	—	9.04	8.91	8.22	7.49	7.92	9.26
Barnett	9.19	8.29	8.45	7.89	8.27	8.76	8.70
Bernard Lodge	9.53	9.27	8.99	8.54	8.60	8.64	8.37
Caymanas	9.09	8.62	8.64	8.64	8.77	8.69	8.87
Frome	8.61	8.69	8.12	8.21	8.62	9.26	9.44
Gray's Inn Central	11.39	10.46	11.12	9.53	11.38	10.52	10.63
Hampden	9.44	—	8.76	9.09	8.16	8.84	9.28
Holland	—	9.41	—	8.20	9.01	8.91	10.09
Innswood	8.90	8.72	8.51	8.32	8.78	8.90	9.34
Jamaica Sugar Estates	10.22	9.66	9.34	8.21	9.15	9.75	9.35
Long Pond	8.83	8.83	9.67	8.84	8.00	9.28	9.55
Monymusk	10.22	9.34	9.15	8.42	8.51	8.95	8.96
New Yarmouth	9.77	9.58	9.26	8.53	8.69	8.89	8.88
Richmond/Llandovery	8.69	8.37	9.09	8.40	9.35	8.35	9.06
Rose Hall	8.54	8.07	7.91	7.70	7.72	8.41	8.22
Serge Island	8.69	8.46	7.66	7.75	7.83	7.97	8.46
Sevens	9.53	8.95	9.53	9.10	9.07	8.78	8.69
United Estates	8.06	8.12	8.23	8.43	7.66	8.11	8.57
Vale Royal	9.01	8.55	9.02	8.84	8.41	8.96	9.13
Worthy Park	8.51	8.28	8.25	7.36	7.60	7.45	7.59
Average	9.41	9.05	8.86	8.42	8.56	8.95	9.03

* Figures quoted from 1951 onwards are theoretical—based on 100 B.H.E. and 97% Pol Extraction.

TABLE V
TONS 96° SUGAR PER ACRE FOR 1946-1954

Estates	1946	1947	1948	1949	1950	1951 (theoretical)	1952 (theoretical)	1953 (theoretical)	1954 (theoretical)
Appleton	—	—	—	2·43	2·97	2·89	2·12	3·29	3·70
Barnett	3·44	3·70	3·18	3·45	4·12	3·86	3·73	3·73	4·07
Bernard Lodge ..	3·79	2·95	4·05	3·49	4·35	4·16	3·31	3·44	3·70
Caymanas	3·81	4·43	3·42	3·74	4·38	3·95	3·59	4·05	4·70
Frome	4·16	4·32	3·66	4·29	4·25	3·72	3·52	3·81	3·79
Gray's Inn Central ..	3·34	3·34	3·03	3·47	2·68	2·89	2·71	2·98	3·09
Hampden	2·08	1·66	2·18	—	2·43	2·87	2·49	2·88	2·49
Holland	—	—	—	3·13	—	3·15	2·67	3·39	3·95
Innswood	3·62	3·57	2·94	3·91	4·00	3·87	3·21	3·93	3·58
Jamaica Sugar Estates	3·54	3·60	3·51	4·68	3·60	4·37	3·69	4·09	3·88
Long Pond	1·82	1·48	1·87	1·91	2·16	2·30	2·17	2·73	2·23
Monymusk	4·65	3·75	3·88	4·37	3·87	3·68	3·68	4·12	4·14
New Yarmouth ..	—	—	4·31	3·50	3·78	4·01	3·60	3·85	3·98
Richmond/Llandoverly	3·03	2·42	2·89	3·83	3·25	2·85	3·13	2·97	3·98
Rose Hall	2·67	1·66	2·35	2·65	2·74	2·75	2·70	2·19	2·85
Serge Island	3·82	3·91	3·38	3·80	3·68	3·35	3·09	3·98	3·71
Sevens	3·46	3·06	3·04	3·77	3·77	3·64	3·32	4·22	4·04
United Estates ..	3·24	3·15	3·24	3·08	3·43	3·41	3·07	3·82	3·91
Vale Royal	2·02	2·03	2·32	2·25	2·37	2·55	2·97	3·12	2·68
Worthy Park	3·86	2·54	3·39	3·33	3·87	3·10	3·02	4·77	4·93
Average	3·59	3·32	3·36	3·68	3·68	3·57	3·29	3·69	3·76

TABLE VI
PERCENTAGE ACREAGE IN EACH CANE CLASS AND AVERAGE LENGTH OF GROWTH IN MONTHS
(Figures in brackets represent percentage total acreage in each cane class for the ecological group)

Estates	Fall plants	Spring plants	Standover spring	1st ratoons	2nd ratoons	3rd ratoons	Old canes	Average length of growth in months
Appleton	20	22	1	22	22	13	1	14·06
Barnett	15	11		27	18	10	19	13·13
Frome	4	6		28	24	19	20	12·16
Holland	8	3		12	7	11	58	12·27
Hampden	11	13	1	20	21	20	15	15·31
Long Pond	7	9		18	10	8	48	11·09
Rose Hall	3	24		21	25	21	5	12·11
Vale Royal	6	18		24	19	17	16	12·37
Bernard Lodge ..	7	15	—	17	16	12	33	12·53
Caymanas	15	12		18	17	14	24	13·46
Innswood	—	12		18	12	9	49	12·56
Monymusk	10	14		26	19	7	24	12·30
New Yarmouth ..	18	13	—	24	23	9	13	12·27
Sevens	—	7		23	21	11	38	11·42
Gray's Inn Central	—	12		18	16	12	42	11·70
Jamaica Sugar Estates	9	7		20	15	15	34	12·63
Richmond/Llandoverly	4	24	—	18	16	22	16	13·43
Serge Island	15	10		40	22	5	8	12·60
United Estates ..	17	9	—	20	23	12	19	13·32
Worthy Park	6	23		32	15	11	13	11·93
Island average ..	9	12	—	23	19	13	24	—
Average length of growth —months	16·01	13·37	21·20	11·87	12·01	12·15	11·77	12·47

TABLE VII
CWTS. THEORETICAL 96° SUGAR/ACRE/MONTH

Estates	Fall plants	Spring plants	Standover spring	1st ratoons	2nd ratoons	3rd ratoons	Old cane	Average
Appleton	5.56	5.77		5.09	4.82	4.79	5.47	5.26
Barnett	6.31	8.48		6.16	6.28	4.28	6.12	6.19
Bernard Lodge	7.10	6.59		5.46	5.35	5.29	5.98	5.91
Caymanas	8.33	7.02		7.19	6.84	5.82	6.52	6.98
Frome	5.95	7.49		6.92	6.12	5.64	5.66	6.23
Gray's Inn Central	—	6.23		5.50	5.10	5.92	4.77	5.28
Hampden	3.23	3.83		3.93	4.09	3.45	3.36	3.67
Holland	5.22	7.04		5.44	5.84	7.50	6.65	6.30
Innswood	—	5.83		5.89	4.85	5.31	5.76	5.67
Jamaica Sugar Estates	5.22	7.04	2.27	5.44	5.89	7.50	6.65	6.30
Long Pond	2.93	3.99		4.67	4.42	4.08	3.96	4.02
Monymusk	6.55	6.37	8.08	6.67	6.44	6.07	7.58	6.73
New Yarmouth	6.44	7.27		6.51	6.13	5.83	6.77	6.48
Richmond/Llandovery	6.61	6.47		5.39	5.82	5.59	6.02	5.93
Rose Hall	3.83	4.94	3.08	4.63	4.76	4.83	5.00	4.75
Serge Island	5.66	5.84		5.74	6.35	5.98	5.89	5.89
Sevens	2.37	8.12		7.06	6.67	7.35	7.04	7.07
United Estates	6.37	7.39		6.30	5.58	5.07	5.01	5.88
Vale Royal	3.14	4.19	4.00	4.67	4.60	4.39	4.15	4.34
Worthy Park	8.15	8.20		9.51	8.60	6.65	6.25	8.27
Average	6.16	6.29	5.75	6.24	5.84	5.52	6.04	6.03

TABLE VIII
CWTS. THEORETICAL SUGAR/ACRE/MONTH

Estates	1946	1947	1948	1949	1950	1951	1952	1953	1954
Appleton	—	—	—	4.98 (85)	5.01 (84)	4.16 (74)	3.73 (69)	5.56 (96)	5.26 (87)
Barnett	4.83 (86)	4.89 (89)	5.00 (91)	5.07 (85)	5.29 (90)	5.19 (92)	5.45 (102)	5.54 (93)	6.19 (102)
Bernard Lodge	6.25 (98)	5.32 (91)	5.95 (95)	5.54 (90)	7.13 (107)	6.26 (104)	5.47 (89)	5.72 (93)	5.91 (91)
Caymanas	6.31 (97)	6.53 (112)	6.13 (97)	6.16 (100)	7.50 (113)	6.16 (100)	5.67 (92)	6.43 (104)	6.98 (107)
Frome	6.18 (110)	6.02 (109)	6.02 (110)	6.20 (104)	6.30 (107)	5.78 (103)	5.43 (101)	5.90 (99)	6.23 (103)
Gray's Inn Central	5.38 (96)	5.11 (93)	5.95 (109)	5.37 (90)	4.35 (74)	5.16 (92)	4.52 (84)	5.96 (100)	5.28 (87)
Hampden	3.33 (90)	2.93 (97)	3.87 (97)	—	4.13 (110)	4.05 (99)	3.59 (84)	4.24 (101)	3.67 (90)
Holland	—	—	—	5.62 (94)	—	4.84 (86)	4.62 (88)	5.21 (87)	6.30 (104)
Innswood	5.85 (90)	5.51 (95)	5.36 (85)	6.01 (97)	6.48 (87)	6.19 (101)	5.39 (88)	5.90 (96)	5.67 (87)
Jamaica Sugar Estates	5.57 (99)	5.53 (100)	5.45 (100)	7.61 (127)	6.62 (112)	7.41 (132)	6.14 (115)	6.73 (113)	6.30 (104)
Long Pond	3.36 (91)	2.92 (96)	3.59 (90)	3.66 (86)	3.22 (86)	3.63 (89)	3.82 (89)	3.86 (92)	4.02 (99)
Monymusk	7.02 (108)	6.40 (110)	6.72 (107)	6.43 (104)	6.34 (96)	6.21 (100)	6.33 (103)	6.37 (103)	6.73 (103)
New Yarmouth	—	—	6.27 (100)	6.53 (108)	6.28 (95)	5.78 (94)	5.84 (95)	5.55 (90)	6.48 (99)
Richmond/Llandovery	4.54 (81)	3.87 (70)	4.63 (85)	5.78 (96)	5.55 (94)	5.29 (84)	4.87 (91)	5.14 (86)	5.93 (98)
Rose Hall	4.67 (126)	3.13 (103)	4.29 (108)	5.22 (122)	4.69 (125)	4.68 (115)	4.88 (114)	3.48 (85)	4.75 (116)
Serge Island	5.61 (99)	5.60 (101)	5.12 (97)	5.38 (90)	5.96 (101)	5.10 (91)	4.81 (90)	6.32 (106)	5.89 (98)
Sevens	5.68 (87)	5.62 (96)	6.43 (102)	—	6.76 (102)	5.90 (96)	6.13 (100)	6.76 (110)	7.07 (108)
United Estates	4.31 (77)	5.00 (91)	5.52 (101)	5.07 (85)	5.34 (90)	5.25 (93)	6.15 (115)	6.05 (102)	5.88 (97)
Vale Royal	3.54 (96)	3.69 (122)	4.15 (105)	4.23 (100)	3.80 (101)	4.24 (104)	5.25 (122)	4.98 (118)	4.34 (106)
Worthy Park	5.60 (98)	4.76 (86)	6.38 (117)	6.19 (103)	6.52 (92)	5.17 (107)	5.71 (107)	7.92 (133)	8.27 (137)
Average	5.65	5.32	5.75	5.87	5.94	5.65	5.44	5.78	6.03

Bold figures in brackets = cwt. theoretical sugar per acre per month expressed as a percentage of the island average in the same year.

Light figures in brackets = cwts. theoretical sugar per acre per month expressed as a percentage of the average for the ecological area in the same year.

TABLE IX

CWTS. SUGAR PER ACRE PER MONTH FOR ECOLOGICAL AREAS FOR VARIETIES

Groups	B3439	B34104	B37172	B37161	POJ2878	Co421	B41227	B42231	B4362	Mixed
Appleton.	5.20	5.39	5.42	6.35	5.93	7.76	6.67	7.25	7.42	5.63
Barnett										
Frome										
Holland										
Hampden	4.50	3.97	—	4.17	3.51	3.97	4.13	2.48	4.53	3.95
Long Pond										
Rose Hall										
Vale Royal										
Bernard Lodge	6.82	5.92	7.38	6.22	5.44	5.92	7.14	5.85	8.50	6.34
Caymanas										
Innswood										
Monymusk										
New Yarmouth										
Sevens										
Gray's Inn Central	5.70	5.12	5.98	5.62	—	—	6.54	—	6.12	5.45
Jamaica Sugar Estates										
Serge Island										
Richmond/Llandovery										
United Estates	5.77	4.94	5.22	5.38	—	—	7.30	7.36	8.65	6.97
Worthy Park										
Average	6.35	5.56	5.94	5.43	3.90	3.90	6.99	5.96	7.55	5.44

TABLE X

TONS CANE PER ACRE FOR VARIETIES

Estates	B3439	B34104	B37161	B37172	B41227	B42231	B4362	POJ2878	Co421	Mixed and others	Average
Appleton	—	30.33	37.14	34.97	45.97	40.12	45.43	36.28	—	33.75	34.32
Barnett	32.20	19.39	36.46	38.65	29.40	—	45.28	—	—	37.82	35.39
Bernard Lodge	26.45	30.16	31.55	—	34.85	36.68	34.46	20.61	—	27.67	30.98
Caymanas	38.00	37.13	68.06	67.90	—	52.81	50.92	36.63	35.50	38.54	41.72
Frome	35.54	32.19	36.85	32.27	41.56	40.54	40.75	32.79	38.20	37.61	35.80
Gray's Inn Central	30.02	32.86	—	32.57	—	—	41.73	—	—	28.57	32.83
Hampden	22.85	—	21.17	—	25.71	—	30.81	21.68	42.00	23.04	23.12
Holland	28.60	28.32	—	—	—	—	44.71	—	—	30.88	30.86
Innswood	25.22	34.11	—	—	37.74	—	23.22	—	—	30.48	33.45
Jamaica Sugar Estates	—	—	—	36.36	—	—	34.63	—	—	39.12	36.21
Long Pond	22.85	18.71	22.94	—	—	24.04	—	19.27	27.21	22.16	21.29
Monymusk	35.73	33.19	36.04	35.32	41.47	36.43	44.46	47.69	—	34.17	37.10
New Yarmouth	30.82	31.63	36.31	—	51.19	40.48	39.93	—	—	37.63	35.35
Richmond/Llandovery	35.28	28.09	34.57	—	50.04	—	47.57	—	—	35.56	36.06
Rose Hall	22.65	21.84	25.75	—	25.04	—	31.80	—	—	25.37	23.42
Serge Island	24.08	30.93	30.15	33.29	26.97	—	38.92	—	—	33.09	31.39
Sevens	34.83	31.20	26.26	—	38.99	—	40.88	—	—	35.09	35.11
United Estates	21.06	26.46	34.43	25.21	48.38	42.14	40.59	—	—	36.52	33.52
Vale Royal	21.78	21.28	27.08	—	30.16	15.09	22.96	—	22.23	25.22	24.48
Worthy Park	22.71	24.06	22.87	23.99	39.88	43.67	40.30	—	—	33.40	37.41
Average	32.56	31.18	31.20	34.87	42.40	37.94	40.15	21.76	23.39	30.96	33.95

TABLE XI
TONS CANE PER TON SUGAR FOR VARIETIES
AND SUGAR/CANE RATIO FOR VARIETIES (expressed as percentages of B34104)

Estates	B34104	B3439	B37161	B37172	B41227	B42231	B4362	POJ2878	Co421	Mixed and others	Average
Appleton	9.25 (100)	—	9.17 (101)	9.20 (101)	9.64 (96)	9.08 (102)	9.96 (93)	9.40 (98)	—	8.90 (104)	9.26 (100)
Barnett	8.70 (100)	8.90 (98)	8.70 (100)	8.76 (99)	8.99 (97)	—	8.09 (108)	—	—	8.48 (103)	8.70 (100)
Bernard Lodge	8.72 (100)	8.16 (107)	8.50 (103)	—	8.85 (99)	8.04 (108)	7.48 (117)	8.88 (98)	—	8.04 (108)	8.37 (104)
Caymanas	9.64 (100)	8.26 (117)	10.73 (90)	9.78 (99)	—	9.48 (102)	8.66 (111)	9.07 (106)	8.57 (112)	9.18 (105)	8.87 (109)
Frome	9.52 (100)	9.50 (100)	9.47 (101)	8.65 (110)	9.73 (98)	9.49 (100)	9.04 (105)	9.59 (99)	8.57 (111)	9.67 (98)	9.44 (101)
Gray's Inn Central ..	10.81 (100)	10.84 (100)	—	10.61 (102)	—	—	10.30 (105)	—	—	10.90 (99)	10.68 (102)
Hampden	—	9.56 (100)	9.24 (103)	—	10.49 (91)	—	9.28 (103)	9.47 (101)	9.66 (99)	9.29 (98)	9.28 (103)
Holland	10.53 (100)	10.29 (102)	—	—	—	—	9.76 (108)	—	—	9.68 (103)	10.09 (104)
Innswood	9.37 (100)	9.20 (102)	—	—	9.20 (102)	—	9.68 (97)	—	—	9.35 (106)	9.34 (100)
Jamaica Sugar Estates	—	—	—	9.40 (100)	—	—	9.16 (103)	—	—	9.08 (98)	9.35 (101)
Long Pond	9.69 (100)	9.10 (106)	9.36 (104)	—	9.77 (99)	—	9.18 (106)	10.59 (92)	—	9.98 (104)	9.55 (101)
Monymusk	8.78 (100)	8.78 (100)	9.12 (96)	9.22 (95)	9.40 (95)	8.74 (93)	9.22 (95)	8.62 (102)	—	8.92 (98)	8.96 (98)
New Yarmouth	9.28 (100)	8.44 (110)	9.03 (103)	—	9.73 (95)	8.88 (105)	8.68 (107)	—	—	8.98 (103)	8.88 (105)
Richmond/Llandovery	9.49 (100)	8.78 (108)	9.29 (102)	—	9.74 (97)	—	9.46 (100)	—	—	9.24 (103)	9.06 (105)
Rose Hall	8.34 (100)	8.24 (101)	7.80 (107)	—	8.58 (97)	—	8.56 (98)	—	—	8.46 (99)	8.22 (101)
Serge Island	9.73 (100)	8.27 (118)	8.35 (117)	8.41 (116)	8.35 (117)	—	8.39 (116)	—	—	8.85 (110)	8.46 (103)
Sevens	8.84 (100)	8.62 (103)	8.50 (104)	—	9.58 (92)	—	8.85 (100)	—	—	8.69 (102)	8.69 (102)
United Estates	8.48 (100)	8.58 (99)	9.04 (94)	7.41 (114)	9.41 (90)	8.07 (105)	8.20 (103)	—	—	8.53 (99)	8.67 (99)
Vale Royal	9.09 (100)	8.78 (104)	8.97 (101)	—	9.61 (95)	9.93 (92)	8.50 (107)	—	9.11 (100)	9.41 (97)	9.13 (100)
Worthy Park	7.76 (100)	7.75 (100)	7.83 (99)	8.02 (97)	7.65 (101)	7.85 (99)	7.46 (104)	—	—	7.63 (102)	7.59 (100)
Average	9.20 (100)	8.64 (106)	9.12 (101)	9.37 (98)	9.46 (97)	8.70 (106)	8.71 (106)	9.14 (101)	9.39 (98)	9.08 (101)	9.03 (102)

TABLE XIA
TONS CANE PER TON SUGAR FOR VARIETIES IN ECOLOGICAL AREAS

Groups	B3439	B34104	B37172	B37161	POJ2878	Co421	B41227	B42231	B4362	Mixed
Appleton	9.15	9.55	9.19	9.25	9.42	8.57	9.71	8.96	9.07	9.38
Barnett										
Frome										
Holland										
Hampden	8.46	9.17	—	9.02	9.19	9.42	9.81	9.91	8.99	9.32
Long Pond										
Rose Hall										
Vale Royal										
Bernard Lodge	8.57	8.97	9.45	9.01	8.99	8.57	9.43	8.74	8.55	8.96
Caymanas										
Innswood										
Monymusk										
New Yarmouth										
Sevens	9.03	10.10	9.41	9.26	—	—	9.57	—	9.51	9.59
Gray's Inn Central ..										
Jamaica Sugar Estates..										
Serge Island										
Richmond/Llandovery	8.56	8.41	7.54	8.37	—	—	8.51	7.94	7.63	8.13
United Estates										
Worthy Park										
Average	8.64	9.20	9.37	9.12	9.14	9.39	9.46	8.70	8.71	9.08

TABLE XII
TONS THEORETICAL 96° SUGAR PER ACRE FOR VARIETIES

Estates	B3439	B34104	B37161	B37172	B41227	B42231	B4362	POJ2878	Co421	Mixed and others	Average
Appleton	—	3.28	4.05	3.80	4.77	4.42	4.56	3.86	—	3.79	3.70
Barnett	3.62	2.23	4.19	4.41	3.27	—	5.60	—	—	4.46	4.07
Bernard Lodge ..	3.24	3.46	3.71	—	3.94	4.55	4.61	2.32	—	3.44	3.70
Caymanas	4.60	3.85	6.34	6.94	—	5.57	5.88	4.04	4.14	4.20	4.70
Frome	3.74	3.38	3.89	3.73	4.27	4.52	4.51	3.42	4.46	3.89	3.79
Gray's Inn Central ..	2.77	3.04	—	3.07	—	—	4.05	—	—	2.62	3.09
Hampden	2.39	—	2.29	—	2.45	—	3.32	2.29	4.35	2.48	2.49
Holland	2.78	2.69	—	—	—	—	4.58	—	—	3.19	3.06
Innswood	2.74	3.64	—	—	4.10	—	2.40	—	—	3.26	3.58
Jamaica Sugar Estates	—	—	—	3.87	—	—	3.78	—	—	4.31	3.88
Long Pond	2.51	1.93	2.45	—	—	2.46	—	2.10	2.57	2.22	2.23
Monymusk	4.07	3.78	3.95	3.83	4.41	4.17	4.82	5.53	—	3.83	4.14
New Yarmouth ..	3.65	3.41	4.02	—	5.26	4.56	4.60	—	—	4.19	3.98
Richmond/Llan-doverly	4.02	2.96	3.72	—	5.14	—	5.03	—	—	3.85	3.98
Rose Hall	2.75	2.62	3.30	—	2.92	—	3.72	—	—	3.00	2.85
Serge Island	2.91	3.18	3.61	3.96	3.23	—	4.64	—	—	3.74	3.71
Sevens	4.04	3.53	3.09	—	4.07	—	4.62	—	—	4.04	4.04
United Estates ..	3.62	3.12	3.81	3.40	5.14	5.22	4.95	—	—	4.28	3.91
Vale Royal	2.48	2.34	3.02	—	3.14	1.52	2.70	—	2.44	2.68	2.68
Worthy Park	2.93	3.10	2.92	2.99	5.21	5.56	5.40	—	—	4.38	4.93
Average	3.77	3.39	3.42	3.72	4.48	4.36	4.61	2.38	2.49	3.41	3.75

TABLE XIII
COMPARISON OF VARIETIES SHOWING ACTUAL YIELDS AND EXPRESSED AS A PERCENTAGE OF B34104

	B34104	B3439	B37172	B37161	POJ2878	B4362	B42231	B41227	Co421
Tons cane per acre per month	2.66 (100)	2.90 (109)	2.67 (100)	2.67 (100)	1.78 (67)	3.41 (128)	2.59 (97)	2.88 (108)	1.88 (71)
	2.58 (100)	2.75 (107)							
	2.61 (100)	2.96 (113)							
	2.60 (100)	2.75 (106)							
	2.59 (100)	2.83 (109)							
	2.60 (100)	2.73 (105)							
Cwts. sugar per acre per month	2.60 (100)	2.77 (107)	5.70 (99)	5.88 (103)	3.90 (68)	7.88 (138)	5.90 (104)	6.11 (107)	3.99 (70)
	5.73 (100)	6.66 (116)							
	5.66 (100)	6.42 (113)							
	5.70 (100)	6.86 (120)							
	5.66 (100)	6.38 (113)							
	5.67 (100)	6.60 (116)							
Tons cane per ton sugar	5.70 (100)	6.34 (111)	9.38 (99)	9.10 (102)	9.11 (102)	8.66 (107)	8.71 (106)	9.43 (98)	9.41 (99)
	5.46 (100)	6.63 (121)							
	9.27 (100)	8.72 (106)							
	9.13 (100)	8.58 (106)							
	9.18 (100)	8.62 (106)							
	9.20 (100)	8.63 (107)							
	9.14 (100)	8.57 (107)							
	9.13 (100)	8.62 (106)							
	9.54 (100)	8.36 (114)							

TOTAL ACREAGE UNDER VARIETY. % TOTAL ACREAGE

[illegible]

TABLE XIV—continued

Estate		PQ12878										B41297			B42931			B4362			Co421	Others							
		'44	'45	'46	'47	'48	'49	'50	'51	'52	'53	'54	'52	'53	'54	'52	'53	'54	'54	'44		'45	'46	'47	'48	'49	'50	'51	'52	'53	'54
..	..	NR	NR	74	44	11	10	6	—	—	1	—	—	—	—	—	—	—	NR	NR	26	38	54	52	36	23	16	11	11
..	..	12	3	—	—	—	—	—	—	—	—	—	2	1	2	—	—	—	67	70	38	18	31	33	11	6	—	2	4
..	..	42	42	39	32	3	4	2	—	—	—	1	1	7	—	—	—	57	50	25	24	34	25	33	25	6	—	2	4
..	..	16	11	8	9	7	4	4	3	3	2	2	—	1	8	—	—	—	80	74	58	36	32	37	30	21	1	1	21
..	..	12	5	2	—	—	—	—	—	—	—	—	1	11	15	—	—	—	89	79	11	52	18	23	18	3	16	17	—
..	..	Frone	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	89	74	17	11	32	17	30	2	—	—	—
..	..	Gray's Inn Central	26	7	94	25	22	20	NR	23	16	—	—	—	—	—	—	—	76	72	74	71	70	65	—	24	36	—	—
..	..	Green Park	26	7	94	25	22	20	NR	23	16	—	—	—	—	—	—	—	50	50	46	68	38	55	52	57	55	57	—
..	..	Hampton	NR	23	27	26	17	13	10	3	4	2	—	—	—	—	—	—	93	78	55	39	22	15	18	17	14	20	18
..	..	Holland	NR	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	93	78	55	39	22	15	18	17	14	20	18
..	..	Jameson Square	7	5	2	—	—	—	—	—	—	—	—	—	—	—	—	—	93	78	55	39	22	15	18	17	14	20	18
..	..	Long Pond	72	75	6	5	2	—	2	2	—	—	1	—	—	—	—	—	93	78	55	39	22	15	18	17	14	20	18
..	..	Long Pond	17	19	14	7	2	—	—	—	16	21	—	—	—	—	—	—	50	28	13	7	10	12	18	19	13	8	13
..	..	Monynusk	—	—	—	—	—	—	—	—	—	—	3	9	21	—	—	—	50	28	13	7	10	12	18	19	13	8	13
..	..	New Yarmouth	—	—	—	—	—	—	—	—	—	—	1	15	—	—	—	—	50	28	13	7	10	12	18	19	13	8	13
..	..	Richmond/Landover	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	93	86	78	55	38	16	13	14	16	16	18
..	..	Rose Hall	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	68	42	30	15	10	9	16	14	12	14	14
..	..	Serge Island	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	68	42	30	15	10	9	16	14	12	14	14
..	..	United Estates	19	7	3	—	—	—	—	—	—	—	5	2	1	—	—	—	38	22	34	42	28	22	15	9	10	10	18
..	..	Vale Royal	18	14	10	4	—	—	—	—	—	—	33	3	—	—	—	—	38	22	34	42	28	22	15	9	10	10	18
..	..	Worthy Park	39	28	23	15	7	2	1	—	—	—	1	3	10	—	—	—	38	22	34	42	28	22	15	9	10	10	18
..	..	..	9	16	3	3	—	—	—	—	—	—	7	11	16	—	—	—	83	31	25	19	15	16	22	14	22	24	26
..	..	..	21	15	14	10	6	4	2	1	1	1	1	5	10	—	—	—	64	58	41	31	21	16	12	11	11	13	13
..	..	Average	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

TABLE XIVa

PLANT ACREAGE UNDER VARIETY % TOTAL PLANT ACREAGE

Estates	B34104					B3439					B37172					B37161															
	'44	'45	'46	'47	'48	'49	'50	'51	'52	'53	'54	'44	'45	'46	'47	'48	'49	'50	'51	'52	'53	'54	'46	'47	'48	'49	'50	'51	'52	'53	'54
Appleton..	NR	NR	51	62	71	67	88	67	3	NR	NR	36	29	4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Barnett ..	1	5	53	44	49	61	95	83	46	5	19	31	17	27	23	38	22	7	11	7	—	—	—	—	—	—	—	—	—	—	—
Barnett Lodge ..	41	27	21	17	23	50	37	30	14	6	18	13	28	28	42	25	24	74	53	30	31	—	—	—	—	—	—	—	—	—	—
Caymans ..	6	23	62	96	98	87	95	92	69	13	16	7	5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Edwards ..	26	74	65	47	11	6	6	6	—	—	81	2	3	—	13	30	38	—	7	16	10	—	—	—	—	—	—	—	—	—	—
Gray's Inn Central	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Green Park ..	NR	22	12	12	—	—	—	—	—	—	29	—	—	—	92	68	88	NR	—	—	—	—	—	—	—	—	—	—	—	—	—
Hampden ..	NR	22	12	12	—	—	—	—	—	—	29	—	—	—	92	68	88	NR	—	—	—	—	—	—	—	—	—	—	—	—	—
Holland ..	NR	83	100	100	35	72	11	47	8	NR	17	11	11	9	14	6	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—
Inwood ..	79	100	—	83	82	61	72	100	41	71	—	93	10	7	10	9	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Jamaica Sugar Estates	27	8	19	—	—	—	—	—	—	—	44	39	15	17	4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Long Pond ..	6	37	64	43	85	67	66	4	—	—	1	6	—	—	16	11	48	2	16	6	—	—	—	—	—	—	—	—	—	—	—
Monymusk ..	16	47	66	69	67	62	70	89	35	1	44	34	21	19	27	31	23	21	31	71	82	—	—	—	—	—	—	—	—	—	—
New Varmouth ..	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Reynolds/Llandovery	—	3	12	13	—	—	—	—	—	—	23	22	19	7	13	27	16	28	13	61	72	34	—	—	—	—	—	—	—	—	—
Rose Hall ..	23	45	32	8	—	—	—	—	—	—	25	44	54	76	91	79	55	72	53	68	64	35	4	—	—	—	—	—	—	—	—
Serge Island ..	8	6	26	45	41	48	11	—	—	—	18	—	13	61	31	27	19	20	31	18	20	—	—	—	—	—	—	—	—	—	—
United Estates ..	1	7	48	69	41	68	67	74	47	9	47	9	19	26	42	39	37	29	39	8	—	—	—	—	—	—	—	—	—	—	—
Vale Royal ..	26	40	32	35	57	35	18	9	3	—	44	41	34	52	24	37	32	13	7	—	—	—	—	—	—	—	—	—	—	—	—
Worthy Park ..	67	84	67	81	62	73	56	—	—	—	36	—	20	—	9	8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average ..	12	33	60	55	61	53	57	55	34	10	3	26	16	17	18	24	25	21	17	24	17	8	—	—	—	—	—	—	—	—	—

TABLE XIVa—continued

Estates	B3172		B41227		B42331		B4362		POJ3878		Others										
	'51	'52	'53	'54	'52	'53	'54	'52	'53	'54	'44	'45	'46	'47	'48	'49	'50	'51	'52	'53	'54
Appleton ..	—	—	—	33	—	—	—	—	—	—	NR	NR	100	45	38	29	31	12	8	18	12
Barnett ..	—	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—
Barnett Lodge ..	—	—	—	—	—	—	—	—	—	—	NR	100	46	38	29	31	12	8	18	12	—
Caymans ..	—	—	—	2	16	6	24	12	22	34	2	95	76	36	22	18	3	11	5	2	—
Edwards ..	—	—	—	—	—	5	25	6	25	34	1	4	61	60	30	39	23	9	36	45	32
Gray's Inn Central	—	—	—	8	31	1	3	8	36	43	—	—	78	70	33	2	1	1	3	3	25
Green Park ..	—	—	—	—	—	—	—	75	—	—	—	—	71	70	33	2	1	1	3	3	27
Hampden ..	—	—	—	—	—	—	—	—	—	—	—	—	71	100	100	—	—	—	—	—	14
Holland ..	—	—	—	—	—	—	—	—	—	—	—	—	NR	100	100	—	—	—	—	—	87
Long Pond ..	—	—	—	—	—	—	—	—	—	—	8	NR	69	85	74	65	70	30	28	34	51
Jamaica Sugar Estates	—	—	—	—	—	—	—	4	22	65	—	NR	—	—	—	68	29	—	—	—	85
Long Pond ..	—	—	—	31	9	—	—	—	—	—	7	7	11	15	19	—	—	—	—	—	85
Monymusk ..	—	—	—	—	—	—	—	—	—	—	33	67	36	53	13	12	10	—	—	—	26
New Varmouth ..	—	—	—	—	—	—	—	28	63	—	33	67	36	53	13	12	10	—	—	—	26
Reynolds/Llandovery	—	—	—	7	25	49	14	30	34	16	30	9	2	5	8	6	14	16	8	3	24
Rose Hall ..	—	—	—	4	43	2	8	12	10	12	—	41	29	9	1	8	6	14	16	8	3
Serge Island ..	—	—	—	—	—	—	—	—	—	—	—	—	—	—	9	8	2	1	2	6	7
Sevens ..	—	—	—	—	—	—	—	—	—	—	92	70	66	13	22	21	3	32	30	20	16
United Estates ..	—	—	—	—	—	—	—	2	13	—	79	100	77	10	18	16	9	4	—	—	14
Vale Royal ..	—	—	—	4	13	—	—	14	79	—	32	19	53	76	28	18	9	4	7	11	13
Worthy Park ..	—	—	—	3	12	4	12	6	33	—	92	84	33	5	11	13	6	4	13	13	15
Average ..	—	—	—	—	—	—	—	3	22	—	31	19	34	8	13	28	22	60	65	59	46
	—	—	—	—	—	—	—	5	55	—	7	16	12	19	29	24	44	57	4	22	11
	1	1	1	—	—	—	—	4	17	23	—	1	1	62	51	29	17	16	10	13	13
	—	—	—	8	14	26	4	9	15	—	—	—	—	—	—	—	—	—	—	—	—

TABLE XV
FERTILIZERS USED

Class	NITROGEN				PHOSPHATE				POTASH			
	Acres fertilized	Tons N used	Mean lbs./acre	Acres fert. % total acres	Acres fertilized	Tons P ₂ O ₅ used	Mean lbs./acre	Acres fert. % total acres	Acres fertilized	Tons K ₂ O used	Mean lbs./acre	Acres fert. % total acres
Fall plants	5344.40	185.11	77.59	94	1148.08	17.31	33.76	20	2357.93	85.46	81.19	42
Spring plants ..	6889.29	247.10	80.34	90	1144.41	16.85	32.98	16	2884.19	105.65	82.05	38
Standover spring ..	39.45	1.88	106.72	100	—	—	—	—	—	—	—	—
1st ratoons	13507.06	476.74	79.06	94	881.97	10.72	27.24	6	6029.57	249.25	92.62	35
2nd ratoons	11043.47	370.92	75.23	93	975.01	10.78	24.75	8	4868.07	197.74	90.99	41
3rd ratoons	7199.86	222.25	69.15	92	541.75	5.15	21.29	7	3962.15	152.30	86.10	50
Old canes	14453.18	515.80	79.94	97	687.50	5.02	16.36	7	5945.50	199.24	75.07	39
Total ..	58477.11	2019.80	77.37	94	5378.72	65.83	27.41	9	26047.41	989.64	85.11	42

TABLE XVA
DISTRIBUTION OF FERTILIZERS
ACRES FERTILIZED % TOTAL, ACRES CROPS 1950-1954

Groups	NITROGEN		PHOSPHATE		POTASH	
	Plants	Ratoons	Plants	Ratoons	Plants	Ratoons
1950						
Wet West	98	99	50	39	91	87
North Coast	93	91	44	40	55	60
Irrigated	91	96	1	2	4	4
Wet East	90	96	25	1	22	2
Central	98	100	79	53	70	63
1951						
Wet West	96	96	36	6	82	88
North Coast	96	92	4	0.2	68	58
Irrigated	94	98	2	0.4	7	10
Wet East	95	95	30	2	32	0.4
Central	89	96	74	5	81	76
1952						
Wet West	98	99	32	7	87	90
North Coast	96	93	2	0.6	74	75
Irrigated	95	99	4	7	6	11
Wet East	80	95	23	0.5	37	10
Central	90	97	49	26	82	70
1953						
Wet West	99	99	43	12	94	95
North Coast	93	94	—	1	74	77
Irrigated	94	98	3	4	8	12
Wet East	92	93	24	2	25	15
Central	99	100	18	33	99	90
1954						
Wet West	98	99	56	10	87	95
North Coast	69	73	2	1	53	58
Irrigated	96	96	3	5	18	16
Wet East	83	99	45	4	28	2
Central	100	100	42	24	99	98

TABLE XVb
DISTRIBUTION OF FERTILIZERS

Crop year	Plants		Mean	Ratoons				
	Fall	Spring		1st	2nd	3rd	4th	Old
1943	90	81	86	86	79	82	82	43
1944	89	81	85	65	58	55	56	45
1945	72	92	82	87	79	81	64	44
1946	88	94	91	93	88	81	67	49
1947	89	84	87	83	76	69	62	55
1948	95	85	90	94	93	87	84	72
1949	93	95	94	96	99	96	—	88
1950	92	93	93	97	97	98	—	93
1951	93	96	95	96	98	99	—	96
1952	92	95	94	99	98	97	—	96
1953	97	94	96	97	99	98	—	96
1954	94	90	92	94	93	92	—	97

The figures indicate the percentage acreage fertilized for each class.

TABLE XVc
AVERAGE N, P₂O₅, K₂O APPLICATIONS
(lbs. per acre)

Groups		1950			1951			1952			1953			1954		
		N	P ₂ O ₅	K ₂ O	N	P ₂ O ₅	K ₂ O	N	P ₂ O ₅	K ₂ O	N	P ₂ O ₅	K ₂ O	N	P ₂ O ₅	K ₂ O
Wet West	Plants	73	31	91	73	42	120	71	48	112	65	47	103	56	34	92
	Ratoons	61	20	86	64	34	116	69	21	99	65	22	102	61	22	101
North Coast	Plants	33	23	39	40	18	55	39	21	64	36	—	71	29	12	72
	Ratoons	31	22	63	49	13	61	40	20	64	37	22	64	31	12	58
Irrigated	Plants	82	43	128	83	87	102	89	33	106	96	15	80	99	21	74
	Ratoons	101	44	132	90	49	105	96	38	99	96	15	77	95	16	70
Wet East	Plants	63	44	57	75	33	71	68	37	72	61	39	64	75	34	68
	Ratoons	81	56	63	87	—	67	87	11	55	64	24	70	83	33	61
Central	Plants	48	27	30	60	40	59	64	44	89	67	31	90	57	38	85
	Ratoons	69	44	66	67	23	72	81	37	104	61	32	80	62	34	63

APPENDIX II

EXPERIMENT DATA

PART 1

RESULTS OF FERTILIZER EXPERIMENTS

A summary of the results of the fertilizer experiments reaped in 1954 is presented below. Actual yields, in tons cane per acre, % sucrose and tons sugar per acre, obtained by control are quoted, and yields obtained from the various levels of fertilizer are expressed as a percentage of control. The variety used in each experiment is also noted.

N.B.—The term "cut back" used in the case of certain fall plant experiments indicates that although planted in the fall of a particular year the cane was reaped the following crop, thus shortening the usual growing period.

	Cwt. per acre									S.E. % g.m.	Significant difference		
	Sulphate of ammonia (N)			18% superphosphate (P)			Muriate of potash (K)				(N)	(P)	(K)
1. Appleton—Appleton—Stephen Piece 2 (3x3x3 NPK) (B37172)													
	0	2	4	0	2	4	0	1	2				
Falls Plants													
Cane	35.1	110	115	37.0	104	104	36.9	103	105	8.3	9.0	—	—
Sucrose .. .	14.0	100	99	14.1	99	98	13.9	100	100	3.1	—	—	—
Sugar.. ..	4.9	110	113	5.2	103	103	5.2	103	105	11.8	9.6	—	—
2. Appleton—Raheen—Bamboo Piece (3x3x3 NPK) (B34104)													
	0	2	4	0	2	4	0	1	2				
Spring Plants													
Cane	24.2	113	112	26.5	94	103	25.4	105	105	14.3	—	—	—
Sucrose .. .	15.6	101	99	15.8	97	98	15.6	100	99	2.2	—	2.2	—
Sugar.. ..	3.8	112	112	4.2	91	100	4.0	104	104	14.1	—	—	—
1st Ratoons													
Cane	32.6	108	110	32.6	108	110	33.9	102	105	4.1	4.3	4.3	4.2
Sucrose .. .	14.4	98	99	14.6	96	95	14.4	97	100	5.1	—	—	—
Sugar.. ..	4.7	106	109	4.8	105	105	4.9	99	104	11.2	—	—	—
2nd Ratoons													
Cane	43.3	116	120	45.4	109	111	48.6	100	99	17.4	—	—	—
3. Appleton—Raheen—Ramos (3x3x3 NPK) (B34104)													
	0	3	6	0	3	6	0	1	2				
Spring Plants													
Cane	27.0	115	115	29.6	102	99	29.1	103	103	7.2	8.0	—	—
Sucrose .. .	15.7	98	98	15.5	100	100	15.4	101	100	2.5	—	—	—
Sugar.. ..	4.2	113	112	4.6	102	99	4.5	105	103	6.8	7.4	—	—
1st Ratoons													
Cane	37.1	113	119	38.8	109	109	39.9	103	105	6.3	7.0	6.7	—
Sucrose .. .	14.0	101	102	13.9	113	111	14.0	105	107	3.7	—	—	—
Sugar.. ..	5.2	114	122	5.4	112	111	5.6	105	107	6.7	7.6	7.3	7.0
2nd Ratoons													
Cane	33.4	128	116	36.5	104	110	37.6	103	101	19.2	—	—	—
4. Appleton—Raheen—Turner 3 (3x3x3 NPK) (B34104)													
	0	3	6	0	3	6	0	1	2				
Spring Plants													
Cane	15.0	117	127	15.9	110	114	17.2	103	98	9.3	6.5	—	10.1
Sucrose .. .	16.0	101	100	16.1	100	100	16.1	100	100	2.3	—	—	—
Sugar.. ..	2.4	119	126	2.6	111	115	2.8	103	97	10.2	11.8	—	11.2
1st Ratoons													
Cane	34.0	106	109	34.0	108	108	33.9	109	107	12.3	—	—	—
Sucrose .. .	15.6	100	99	15.8	98	97	15.6	98	101	3.7	—	—	—
Sugar.. ..	5.3	106	109	5.4	105	105	5.3	108	108	14.1	—	—	—
2nd Ratoons													
Cane	20.8	121	125	20.7	111	137	23.8	102	101	15.4	17.8	17.9	—
5. Barnett—Burma 3 (3x3x3 NPK) (B37161)													
Not reaped as plants	0	3	6	0	4	8	0	1	2				
1st Ratoons													
Cane	24.8	95	114	23.4	106	121	25.1	100	105	19.2	—	—	—
Sucrose .. .	13.6	98	101	13.6	100	99	13.3	103	102	4.0	—	—	—
Sugar.. ..	3.4	93	115	3.2	106	120	3.4	102	107	20.3	—	—	—
2nd Ratoons													
Cane	19.0	113	139	21.0	104	115	21.6	108	102	17.5	20.6	—	—
Sucrose .. .	13.4	99	101	13.7	99	96	13.4	100	101	4.6	—	—	—
Sugar.. ..	2.6	111	141	2.9	103	111	2.9	108	103	18.6	21.9	—	—

	Cwt. per acre									S.E. % g.m.	Significant difference			
	Sulphate of ammonia (N)			18% superphosphate (P)			Muriate of potash (K)				(N)	(P)	(K)	
6. Barnett—Belfield—Mango Piece (3x3x3 NPK) (B37161)														
	0	3	6		0	4	8		0	1	2			
Fall Plants														
Cane	63.5	97	101		61.8	105	101		58.9	102	119	15.1	—	— 16.2
1st Ratoons														
Cane	42.5	94	109		47.9	90	79		40.6	91	126	23.0	—	— 24.4
2nd Ratoons														
Cane	40.7	115	116		44.7	103	98		41.2	108	119	13.8	15.3	— 15.1
Sucrose ..	12.5	103	101		12.7	100	100		13.0	96	98	6.2	—	—
Sugar.. ..	5.1	118	117		5.7	101	97		5.4	103	117	15.4	—	—
7. Barnett—Catherine Mount—Yam Piece (4x3x2 NPK) (B37161)														
	0	2	4	6	0	4	8		0	2				
Fall Plants														
Cane	56.9	104	107	138	58.7	109	116		59.0	109		9.1	13.9	— 23.2
1st Ratoons														
Cane	43.2	108	118	115	47.5	100	100		47.9	98		7.4	11.1	—
Sucrose ..	13.4	98	98	101	13.4	100	97		13.5	97		3.2	—	— 7.8
Sugar.. ..	5.8	106	115	116	6.4	100	96		6.5	95		8.2	12.2	—
2nd Ratoons														
Cane	46.8	107	114	114	52.5	100	91		48.1	112		22.2	—	—
Sucrose ..	11.4	99	100	100	11.5	102	94		11.6	96		3.8	— 4.5	— 9.2
Sugar.. ..	5.3	106	114	114	6.0	103	86		5.6	108		34.5	—	—
8. Barnett—Fairfield—Bottom Rice (3x3x3 NPK) (B37161)														
	0	3	6		0	4	8		0	1	2			
Spring Plants														
Cane	40.4	101	100		40.6	99	101		39.4	103	106	5.9	—	— 6.1
Sucrose ..	13.8	101	100		13.9	100	99		13.9	99	100	2.4	—	—
Sugar.. ..	5.6	102	101		5.7	99	100		5.5	101	106	5.9	—	— 6.0
1st Ratoons														
Cane	37.8	113	108		41.6	91	101		40.3	97	104	24.7	—	—
Sucrose ..	13.0	101	96		13.1	95	98		12.7	99	103	6.4	—	—
Sugar.. ..	4.8	115	106		5.3	84	97		5.1	96	107	19.7	—	—
9. Caymanas—Cumberland Pen—Section 9 (3x3x3 NPK) (B4362)														
	0	3	6		0	3	6		0	1	2			
Spring Plants														
Cane	62.3	114	117		67.2	109	97		62.9	113	114	9.0	9.9	9.2 9.8
10. Caymanas—Dawkins—Section 10 (3x3 NK) (B4362)														
	0	3	6						0	1	2			
Spring Plants														
Cane	44.3	110	105						45.8	105	99	14.8	—	—
1st Ratoons														
Cane	45.9	100	100						47.8	94	93	15.4	—	—
11. Frome—Belle Isle—Belle Isle—Greaves (3x3x3 NPK) (B37161)														
	0	2	4		0	3	6		0	1½	3			
Spring Plants														
Cane	32.4	106	106		34.0	99	98		32.9	99	108	6.6	—	— 6.8
Sucrose ..	14.7	96	97		14.5	101	98		14.4	100	100	4.7	—	—
Sugar.. ..	4.8	102	104		4.9	100	96		4.7	100	108	6.4	—	— 6.6
1st Ratoons														
Cane	43.4	109	112		48.6	93	93		45.1	98	111	8.4	9.0	— 8.7
Sucrose ..	13.9	103	103		13.9	101	103		14.3	99	101	5.5	—	—
Sugar.. ..	6.1	111	115		6.8	94	96		6.4	97	112	7.4	8.1	— 7.7
2nd Ratoons														
Cane	43.1	105	121		50.5	90	80		45.5	100	109	9.2	10.0	8.6
Sucrose ..	13.6	99	98		13.2	105	102		13.8	97	96	4.1	—	—
Sugar.. ..	6.0	102	119		6.7	94	90		6.3	98	104	8.9	9.5	8.4

	Cwt. per acre									S.E. % g.m.	Significant difference			
	Sulphate of ammonia (N)			18% superphosphate (P)			Muriate of potash (K)				(N)	(P)	(K)	
12. Frome—Belle Isle—Paul Island—Soffrey Common (3x3x3 NPK) (B41227)														
Fall Plants (Cut back)	0	2	4		0	3	6		0	1½	3			
Cane ..	14.0	109	126		14.9	101	95		14.5	103	101	14.7	—	—
Sucrose ..	13.3	101	97		13.7	95	95		13.3	97	100	6.0	—	—
Sugar..	1.9	109	102		2.0	97	91		1.9	99	102	17.9	—	—
1st Ratoons														
Cane ..	44.5	105	101		44.4	104	103		44.6	104	101	8.1	—	—
Sucrose ..	14.9	101	97		14.9	99	96		14.7	101	98	4.7	—	—
Sugar..	6.6	106	98		6.7	103	99		6.6	105	99	11.0	—	—
2nd Ratoons														
Cane ..	39.8	116	114		41.4	110	108		41.0	111	110	9.5	10.5	—
Sucrose ..	13.1	100	99		13.3	97	99		13.1	98	100	6.5	—	—
Sugar..	5.2	117	113		5.5	107	107		5.4	110	110	11.4	12.6	—
13. Frome—Frome—Blue Castle—Bamboo Walk (3x3x3 NPK) (B34104)														
	0	2	4		0	3	6		0	1½	3			
Fall Plants														
Cane ..	36.2	100	109		36.8	104	99		33.5	119	114	10.5	—	—
Sucrose ..	11.9	99	91		11.9	102	88		11.0	102	112	13.3	—	—
Sugar..	4.4	98	100		4.4	105	88		3.7	121	127	11.0	—	—
1st Ratoons														
Cane ..	27.3	107	119		30.1	100	95		23.1	144	142	14.1	15.4	—
Sucrose ..	11.6	92	88		10.2	104	92		10.1	108	112	12.3	—	—
Sugar..	3.2	100	107		3.3	106	89		2.4	152	156	15.2	—	—
2nd Ratoons														
Cane ..	22.5	111	127		25.6	98	99		21.3	130	127	13.8	15.6	—
Sucrose ..	10.8	124	110		12.8	94	86		12.8	93	88	20.5	—	—
Sugar..	2.5	132	135		3.3	95	92		2.7	120	120	17.1	21.0	—
14. Frome—Frome—Blue Castle—Guthrie Pen (3x2x4 NPK) (B37161)														
	0	2	4		0	3		0	1	2	3			
Spring Plants														
Cane ..	44.0	108	110		45.9	103		46.3	101	102	101	6.8	10.1	—
Sucrose ..	13.2	101	100		13.3	99		13.2	103	101	102	1.9	—	—
Sugar..	5.8	108	110		6.1	103		6.1	103	103	99	9.3	—	—
1st Ratoons														
Cane ..	28.5	121	131		33.7	100		31.5	106	106	113	7.9	11.0	—
Sucrose ..	12.3	99	94		12.0	100		11.7	101	104	106	5.2	—	—
Sugar..	3.5	114	123		4.0	97		3.6	108	107	121	9.2	12.2	—
15. Frome—Frome—Blue Castle—School House 1 (3x3x3 NPK) (B4362)														
	0	2	4		0	3	6		0	1½	3			
Fall Plants (Cut back)														
Cane ..	35.8	114	119		37.0	110	113		37.4	110	109	14.9	16.7	—
Sucrose ..	12.0	98	95		12.5	96	88		11.8	99	102	9.7	—	—
Sugar..	4.3	113	115		4.6	106	99		4.4	109	111	12.7	13.9	—
1st Ratoons														
Cane ..	24.0	142	167		31.3	106	108		29.3	118	118	11.9	16.3	—
Sucrose ..	15.0	101	100		15.1	100	100		15.1	99	100	3.4	—	—
Sugar..	3.6	144	169		4.7	106	109		4.4	118	119	10.1	13.9	—
16. Frome—Frome—Fontabelle—Morass 4 (4x2x3 NPK) (B4362)														
	0	2	4	6	0	3		0	1½	3				
Fall Plants														
Cane ..	55.5	104	111	103	59.2	96		56.3	103	107	13.9	—	—	—
Sucrose ..	12.8	105	104	98	13.5	94		12.8	103	102	4.7	—	5.6	—
Sugar..	7.1	110	116	101	8.0	91		7.2	106	109	15.5	—	—	—
1st Ratoons														
Cane ..	41.2	98	96	91	39.9	99		36.4	108	119	11.6	—	—	14.9
Sucrose ..	11.7	104	99	103	12.0	99		11.6	104	103	9.8	—	—	—
Sugar..	4.9	100	94	93	4.8	99		4.3	112	121	18.3	—	—	—

	Cwt. per acre									S.E. % g.m.	Significant difference			
	Sulphate of ammonia (N)			18% superphosphate (P)			Muriate of potash (K)				(N)	(P)	(K)	
17. Frome—Frome—Frome—Big Kentish (3x3x3 NPK) (B41227)														
	0	2	4		0	3	6		0	1½	3			
Fall Plants														
Cane ..	73.7	106	106		76.6	102	98		72.0	107	113	7.5	—	8.1
Sucrose ..	8.9	103	86		7.9	112	111		7.6	112	125	18.7	—	16.9
Sugar..	6.7	110	97		6.5	109	106		5.8	114	138	15.6	—	18.4
1st Ratoons														
Cane ..	63.5	103	104		66.9	100	92		55.7	124	127	11.5	—	13.5
Sucrose ..	11.0	88	88		8.8	120	127		9.1	121	112	26.5	—	—
Sugar..	7.1	95	97		6.2	122	114		5.3	144	144	22.4	—	29.2
2nd Ratoons														
Cane ..	61.8	94	93		61.5	95	93		51.9	116	125	13.8	—	15.8
Sucrose ..	12.6	100	90		11.9	104	102		11.8	104	103	8.8	9.2	—
Sugar..	7.8	94	86		7.5	97	94		6.3	121	128	17.2	—	20.1
18. Frome—Masemure—Albany—Molly (4x3x3 NPK) (B4362)														
	0	2	4	6		0	3	6		0	1½	3		
Fall Plants														
(Cut back)														
Cane ..	29.4	111	135	150		35.7	99	107		35.6	97	110	13.5	17.1
Sucrose ..	12.3	98	91	80		11.2	100	100		10.6	111	107	5.3	5.9
Sugar..	3.6	109	124	120		4.0	99	107		3.8	106	116	12.8	14.9
1st Ratoons														
Cane ..	17.9	149	215	244		30.9	101	106		27.6	115	129	12.2	21.7
Sucrose ..	14.5	103	101	96		14.3	104	101		14.3	102	102	2.7	2.7
Sugar..	2.6	152	218	233		4.4	103	108		3.9	117	132	12.4	29.8
19. Frome—Masemure—Albany—New Murray (3x3x3 NPK) (B34104)														
	0	2	4			0	3	6		0	1½	3		
Fall Plants														
Cane ..	19.5	118	120			19.5	115	123		20.0	114	115	8.7	9.9
Sucrose ..	16.6	94	93			16.1	99	98		15.7	102	101	6.1	—
Sugar..	3.2	112	112			3.1	114	121		3.2	116	116	6.5	7.1
1st Ratoons														
Cane ..	17.8	138	146			20.3	118	120		19.9	116	126	9.9	12.8
Sucrose ..	14.9	101	102			15.2	100	99		14.9	102	103	3.0	—
Sugar..	2.7	140	148			3.1	118	120		3.0	119	129	10.4	13.5
2nd Ratoons														
Cane ..	12.3	158	190			13.9	147	149		15.3	125	136	20.0	30.1
Sucrose ..	15.4	101	98			15.6	98	98		15.2	102	102	3.4	—
Sugar..	1.9	162	190			2.2	141	143		2.4	124	136	19.3	29.2
20. Frome—Masemure—Charlottenburgh—Tin (3x3x3 NPK) (B34104)														
	0	2	4			0	3	6		0	1½	3		
Fall Plants														
(Cut back)														
Cane ..	30.0	105	134			32.4	107	107		36.4	88	92	12.1	13.8
Sucrose ..	11.6	96	76			10.6	101	94		10.3	103	102	14.0	15.8
Sugar..	3.5	101	103			3.5	109	100		3.8	91	92	14.8	—
1st Ratoons														
Cane ..	19.3	122	153			22.8	110	108		24.0	95	106	17.4	21.8
Sucrose ..	13.0	103	90			12.7	98	99		11.9	107	111	6.4	6.6
Sugar..	2.5	126	140			2.9	108	106		2.8	103	119	18.0	22.0
21. Frome—Masemure—Masemure—Sarah Gravey (3x3x3 NPK) (B37161)														
	0	2	4			0	3	6		0	1½	3		
Spring Plants														
Cane ..	39.4	113	119			43.8	101	98		42.9	98	107	11.7	13.1
Sucrose ..	14.9	98	99			14.7	101	99		14.7	99	101	13.9	—
Sugar..	5.9	112	118			6.5	102	97		6.3	97	108	12.2	—
1st Ratoons														
Cane ..	32.4	130	135			40.8	93	98		40.1	89	107	11.5	14.0
Sucrose ..	13.9	100	95			14.6	92	93		13.7	101	101	4.1	4.2
Sugar..	4.4	133	133			5.7	88	95		5.4	90	108	4.4	5.4

	Cwt. per acre									S.E. % g.m.	Significant difference		
	Sulphate of ammonia (N)			18% superphosphate (P)			Muriate of potash (K)				(N)	(P)	(K)
	0	2	4	0	3	6	0	1½	3				
22. Frome—Masemure Retrieve—New Hope (3x3x3 NPK) (B34104)													
Fall Plants	0	2	4	0	3	6	0	1½	3				
Cane ..	33.3	103	118	33.4	108	111	35.9	100	98	6.6	7.0	7.0	—
Sucrose ..	14.1	95	92	13.5	96	104	13.5	101	99	8.4	8.8	—	—
Sugar..	4.7	98	109	4.5	105	116	4.9	101	98	9.6	10.0	10.4	—
1st Ratoons													
Cane ..	21.1	119	129	24.0	100	107	24.4	103	99	4.3	5.0	4.4	—
Sucrose ..	12.5	91	89	11.4	103	103	9.0	104	110	5.4	5.7	—	5.1
Sugar..	2.6	110	116	2.7	103	109	2.7	106	108	7.3	8.0	7.7	7.7
2nd Ratoons													
Cane ..	22.6	142	143	29.3	101	97	28.0	111	100	10.2	13.2	—	—
Sucrose ..	12.8	93	96	12.5	100	96	12.1	100	105	8.6	—	—	—
Sugar..	2.9	134	139	3.7	101	93	3.4	110	105	15.3	19.0	—	—
23. Frome—Mint—Mint—Rugland (3x3x3 NPK) (B34104)													
Fall Plants	0	2	4	0	3	6	0	1½	3				
(Cut back)													
Cane ..	28.2	112	113	26.2	119	131	29.0	105	110	9.0	9.8	10.6	6.1
Sucrose ..	12.2	95	95	12.2	94	96	11.5	103	102	6.1	—	—	—
Sugar..	3.4	107	107	3.2	113	126	3.4	109	113	12.0	—	13.5	12.8
1st Ratoons													
Cane ..	14.2	136	163	14.9	136	145	16.4	122	124	17.5	23.4	22.3	20.3
Sucrose ..	13.5	101	92	13.2	98	100	13.0	100	102	6.2	6.3	—	—
Sugar..	1.9	139	151	2.0	131	145	2.1	121	126	16.1	20.9	20.2	18.6
24. Frome—Mint—Mt. Eagle—Mountain Guava (3x3x3 NPK) (B34104)													
Fall Plants	0	2	4	0	3	6	0	1½	3				
Cane ..	31.3	98	101	28.8	111	114	28.4	113	116	10.0	—	10.9	11.0
Sucrose ..	11.5	99	105	12.4	95	88	11.6	105	98	16.4	—	—	—
Sugar..	3.6	97	105	3.6	106	101	3.3	118	113	5.7	5.8	—	6.3
1st Ratoons													
Cane ..	23.7	119	132	25.2	114	115	25.6	113	111	11.1	13.0	12.2	—
Sucrose ..	12.3	96	102	12.8	98	92	12.3	97	100	6.8	—	7.2	—
Sugar..	2.9	114	134	3.2	110	105	3.2	109	111	10.5	12.3	—	—
2nd Ratoons													
Cane ..	16.7	117	132	18.2	112	109	18.0	108	116	19.1	22.4	—	—
Sucrose ..	14.2	103	98	14.2	101	98	13.9	102	105	6.6	—	—	—
Sugar..	2.4	120	130	2.6	113	107	2.5	111	123	18.7	18.8	—	21.0
25. Frome—Shrewsbury—Cornwall—Balm (3x3x3 NPK) (B41227)													
Fall Plants	0	2	4	0	3	6	0	1½	3				
(Cut back)													
Cane ..	18.4	105	99	18.3	102	103	18.2	104	104	9.7	—	—	—
Sucrose ..	11.9	99	100	11.9	101	98	11.5	104	103	3.6	—	—	3.5
Sugar..	2.2	103	99	2.2	103	101	2.1	108	107	9.3	—	—	—
1st Ratoons													
Cane ..	55.7	99	96	53.4	101	107	53.0	103	107	7.6	—	—	—
Sucrose ..	10.8	99	96	9.9	112	111	10.1	112	105	10.0	—	9.3	—
Sugar..	6.1	100	93	5.4	111	116	5.4	115	113	10.4	—	11.4	11.5
26. Frome—Shrewsbury—Cornwall—John Grass (3x3x3 NPK) (B34104)													
Fall Plants	0	2	4	0	3	6	0	1½	3				
Cane ..	37.5	110	113	40.1	102	100	34.9	119	128	9.6	10.4	—	11.2
Sucrose ..	9.2	103	94	8.8	108	103	8.8	102	109	16.9	—	—	—
Sugar..	3.6	110	107	3.7	107	101	3.1	126	139	21.1	—	—	25.8
1st Ratoons													
Cane ..	26.9	113	125	29.5	108	100	23.2	141	151	10.1	11.4	—	13.2
Sucrose ..	9.9	99	92	9.9	93	97	8.3	115	133	12.6	—	—	11.1
Sugar..	2.8	111	117	3.0	105	101	2.0	161	197	14.9	16.3	—	22.9
2nd Ratoons													
Cane ..	20.8	119	143	24.8	108	95	21.5	120	131	14.4	17.5	—	17.0
Sucrose ..	12.8	96	94	12.6	96	97	12.1	105	103	9.0	—	—	—
Sugar..	2.7	114	136	3.1	104	93	2.6	124	134	16.0	18.8	—	19.1

	Cwt. per acre									S.E. % g.m.	Significant difference		
	Sulphate of ammonia (N)				18% superphosphate (P)		Muriate of potash (K)				(N)	(P)	(K)
27. Frome—Shrewsbury—Cornwall—Porter (4x2x3 NPK) (B34104)													
	0	2	4	6	0	3		0	1½	3			
Fall Plants													
Cane ..	33.8	101	103	104	33.9	103		32.8	108	106	10.2	—	—
Sucrose ..	9.1	105	104	102	9.3	101		8.9	108	107	12.1	—	—
Sugar..	3.2	103	104	104	3.2	105		3.0	115	112	14.8	—	—
1st Ratoons													
Cane ..	30.6	121	127	125	35.0	106		30.4	121	135	8.4	13.5	—
Sucrose ..	9.3	96	99	91	8.8	101		8.1	108	123	18.1	—	19.5
Sugar..	2.9	118	119	115	3.2	105		2.5	128	164	18.6	—	28.7
28. Frome—Shrewsbury—Friendship—Morass 3 (3x3x3 NPK) (B4362)													
	0	2	4		0	3	6	0	1½	3			
Fall Plants													
Cane ..	42.7	106	111		46.0	96	99	42.2	111	111	8.1	8.6	—
Sucrose ..	12.5	103	100		12.6	102	97	12.1	106	106	10.1	—	—
Sugar..	5.4	107	111		5.8	98	96	5.1	117	119	8.0	8.5	—
29. Frome—Shrewsbury—Shrewsbury—River Piece 1 (3x3x3 NPK) (B4362)													
	0	2	4		0	3	6	0	1½	3			
Fall Plants													
Cane ..	32.1	91	95		29.8	105	105	23.3	141	154	8.5	—	11.2
Sucrose ..	10.3	100	91		10.1	108	90	7.8	146	155	16.2	—	12.6
Sugar..	3.6	90	90		3.3	107	94	1.9	197	228	11.7	—	20.5
1st Ratoons													
Cane ..	26.7	102	115		27.3	105	105	21.6	138	154	8.0	8.5	—
Sucrose ..	13.4	101	99		13.3	101	100	12.7	108	106	4.2	—	4.1
Sugar..	3.6	103	111		3.7	106	104	2.8	148	163	8.6	9.0	—
30. Gray's Inn Central—Gibraltar—Section 18 (3x3x3 NPK) (B37172)													
	0	3	6		0	3	6	0	1	2			
Spring Plants													
Cane ..	39.1	93	87		38.4	99	85	35.4	109	100	19.8	—	—
1st Ratoons													
Cane ..	29.9	86	98		29.1	97	94	29.3	94	95	21.3	—	—
31. Gray's Inn Central—Iter Boreale Seymour (3x3x3 NPK) (B37172)													
	0	3	6		0	4	8	0	1	2			
1st Ratoons					Not reaped as plants								
Cane ..	20.4	141	191		27.3	107	114	27.1	121	103	18.0	25.9	—
32. Hampden—Gales Valley—Little Quarry (3x3x3 NPK) (B3172)													
	0	2	4		0	4	8	0	1	2			
Spring Plants													
Cane ..	32.2	95	94		30.7	98	106	26.3	124	130	15.9	—	18.8
1st Ratoons													
Cane ..	35.4	93	84		33.5	97	96	28.4	119	127	23.1	—	—
2nd Ratoons													
Cane ..	24.8	120	109		26.9	105	98	26.2	112	100	18.0	—	—
33. Hampden—Golden Pond—Race Course (3x3x3 NPK) (B3172)													
	0	2	4		0	3	6	0	1	2			
Spring Plants													
Cane ..	35.4	103	104		35.8	102	100	32.1	120	118	15.8	—	17.9
1st Ratoons													
Cane ..	29.5	96	97		28.6	103	99	22.4	135	152	12.1	—	15.7
Sucrose ..	11.7	102	104		11.8	101	100	11.4	104	108	5.5	—	5.3
Sugar..	3.5	99	99		3.4	103	98	2.6	139	161	14.6	—	19.6
2nd Ratoons													
Cane ..	29.9	107	118		30.9	115	99	25.4	139	143	13.4	13.6	13.1

	Cwt. per acre									S.E. % g.m.	Significant difference		
	Sulphate of ammonia (N)			18% superphosphate (P)			Muriate of potash (K)				(N)	(P)	(K)
34. Innswood—Montpelier—Section 8 (3x3x3 NPK) (B34104)													
	0	3	6	0	3	6	0	1	2				
Spring Plants													
Cane	30.0	117	120	33.1	102	104	31.4	111	111	7.6	8.6	—	8.2
Sucrose ..	13.6	101	100	13.5	94	94	13.6	94	97	7.8	—	—	—
Sugar.. ..	3.9	118	120	4.5	96	98	4.1	109	112	9.3	10.6	—	10.0
1st Ratoons													
Cane	31.1	124	118	34.9	100	105	32.0	116	116	8.6	9.8	—	9.5
2nd Ratoons													
Cane	16.7	140	140	20.5	108	102	18.3	121	126	14.2	18.1	—	16.5
35. Innswood—Warwick Castle—Section 12 (3x3x3 NPK) (B34104)													
	0	2	4	0	3	6	0	1	2				
Fall Plants													
Cane	41.8	123	129	48.2	103	101	48.4	98	105	6.5	7.6	—	—
Sucrose ..	13.5	100	98	13.8	92	101	13.2	104	101	8.3	—	—	—
Sugar.. ..	5.7	124	127	6.7	96	103	6.5	101	106	8.8	10.3	—	—
1st Ratoons													
Cane	30.1	104	109	32.3	93	97	27.8	112	126	20.0	—	—	—
2nd Ratoons													
Cane	25.1	152	148	33.7	101	98	33.8	101	98	10.7	14.3	—	—
36. Innswood—Warwick Castle—Jackson Road 8 (4x3x2 NPK) (B34104)													
Spring Plants (Standover)	0	2½	5	0	3	6	0	1½					
Cane	45.5	108	110	48.8	99	98	47.0	105		6.9	—	—	—
37. Jamaica Sugar Estates—Chiswick—Section 5 (4x3x2 NPK) (B4362)													
	0	2	4	0	2	4	0	1½					
Fall Plants													
Cane	33.2	107	99	102	27.4	137	134	30.6	121	15.1	—	22.1	16.1
38. Jamaica Sugar Estates—Spanish Wood—Section 16 (3x3x3 NPK) (B37172)													
	0	3	6	0	3	6	0	1	2				
Fall Plants													
Cane	21.7	125	128		20.0	139	142	23.3	117	111	16.4	19.3	20.9
1st Ratoons													
Cane	13.2	168	190		16.6	129	136	18.0	119	117	12.2	18.7	14.8
Sucrose ..	12.3	91	88		11.7	89	106	11.6	100	97	8.2	7.6	8.1
Sugar.. ..	1.6	152	167		1.9	115	144	2.1	118	109	15.6	21.9	18.7
2nd Ratoons													
Cane	17.6	137	162		19.7	131	124	20.9	123	114	19.3	25.7	22.8
39. Long Pond—Hyde Hall—Pushon (3x3x3 NPK) (POJ2878)													
	0	2	4	0	2	4	0	1	2				
Fall Plants													
Cane	25.8	101	103		23.7	118	114	24.5	93	128	15.2	—	—
Sucrose ..	10.2	95	94		9.5	106	107	9.3	104	113	13.5	—	—
Sugar.. ..	2.7	94	95		2.3	122	118	2.3	97	144	20.9	—	—
40. Long Pond—Kinloss—Trouble (3x2x4 NPK) (B3439)													
	0	1	2	0	3	0	1	2	3				
Spring Plants													
Cane	10.7	110	119		11.9	97		7.5	163	168	189	17.0	—
1st Ratoons													
Cane	28.3	91	90		27.2	95		23.4	123	109	120	28.6	—
Sucrose ..	11.9	102	101		11.9	102		10.9	115	115	111	9.8	—
Sugar.. ..	3.4	92	91		3.3	97		2.6	139	122	130	32.6	—
2nd Ratoons													
Cane	22.1	113	125		24.8	102		21.2	113	117	140	15.7	—

	Cwt. per acre									S.E. % g.m.	Significant difference		
	Sulphate of ammonia (N)				18% superphosphate (P)		Muriate of potash (K)				(N)	(P)	(K)
41. Monymusk—Bog—Richard 2 (4x2x3 NPK)													
	0	2½	5	7½	0	3	0	1	2				
Spring Plants													
Cane	52.3	98	93	99	52.3	95	51.2	101	97	10.7	—	—	—
Sucrose ..	13.8	103	103	96	14.0	98	13.9	99	100	8.9	—	—	—
Sugar.. ..	7.3	101	96	96	7.4	93	7.2	100	97	14.0	—	—	—
Not reaped as 1st Ratoons													
2nd Ratoons													
Cane	44.6	107	95	117	46.5	101	49.3	99	86	20.0	—	—	—
Sucrose ..	8.5	108	106	90	8.6	99	8.6	102	98	7.0	9.6	—	—
Sugar.. ..	3.8	114	100	104	4.0	100	4.2	99	84	20.3	—	—	—
42. Monymusk—Springfield—Priscilla 2 (3x3x3 NPK) (B3439)													
	0	2	4		0	3	6	0	1	2			
Not reaped as plants													
1st Ratoons													
Cane	18.8	89	107		18.6	96	102	19.7	91	91	16.2	—	—
Sucrose ..	10.0	103	102		10.2	100	100	10.3	101	90	7.7	—	—
Sugar.. ..	1.7	91	107		1.7	96	104	1.8	92	87	19.6	—	—
43. New Yarmouth—Dry River—Section 41 (3x3x3 NPK) (B3439)													
	0	3	6		0	3	6	0	1	2			
Spring Plants													
Cane	32.4	114	112		34.8	102	101	34.9	100	103	14.5	—	—
Sucrose ..	13.2	103	97		13.4	99	98	13.6	96	95	6.0	—	—
Sugar	4.3	118	108		4.7	101	100	4.8	95	97	15.8	—	—
1st Ratoons													
Cane	21.6	138	145		27.3	102	100	27.3	96	106	15.4	19.8	—
44. Richmond/Llandovery—Richmond—Pawpaw (3x3x3 NPK) (B37161)													
	0	2	4		0	3	6	0	1	2			
Spring Plants													
Cane	37.5	100	101		36.8	103	104	38.5	95	98	8.7	—	—
1st Ratoons													
Cane	25.6	108	115		28.0	99	96	26.8	101	107	8.2	8.8	—
Sucrose ..	14.7	98	97		14.6	98	99	14.3	102	100	4.3	—	—
Sugar.. ..	3.8	105	111		4.1	96	95	3.8	103	107	9.4	10.0	—
2nd Ratoons													
Cane	38.7	117	121		44.4	97	97	41.9	105	107	9.4	10.6	—
45. Richmond/Llandovery—Richmond—Sam Darling (3x3x3 NPK) (B3439)													
	0	2	4		0	4	8	0	1	2			
Fall Plants													
Cane	40.1	94	101		40.4	98	96	37.4	107	110	11.3	—	—
Sucrose ..	13.3	100	103		13.1	105	102	13.5	98	101	4.9	—	—
Sugar.. ..	5.3	94	104		5.3	103	98	5.0	105	112	9.6	—	10.2
1st Ratoons													
Cane	23.9	113	133		26.5	110	102	25.2	115	112	13.4	15.5	—
Sucrose ..	14.1	97	101		14.1	98	100	13.7	104	105	4.8	—	—
Sugar.. ..	3.4	110	136		3.8	108	102	3.5	119	117	15.1	17.4	—
46. Richmond/Llandovery—Richmond—Richmond Piece													
	0	2	4		0	2	4	0	1	2			
Spring Plants													
Cane	78.4	103	103		77.2	106	104	81.4	96	98	6.3	—	—
47. Rose Hall—Cornwall Mountain—Pleasant Piece													
	0	2	4		0	2	4	0	1	2			
Fall Plants													
Cane	33.3	97	103		28.2	122	131	30.5	118	109	13.2	—	15.7
48. Rose Hall—Surround I, 2 (2x2x2 NPK) (B37161)													
	0	2			0	3		0	1				
Spring Plants													
Cane	14.1	95			13.8	100		12.5	121		12.0	—	15.3

	Cwt. per acre									S.E. % g.m.	Significant difference		
	Sulphate of ammonia (N)			18% superphosphate (P)			Muriate of potash (K)				(N)	(P)	(K)
49. Serge Island—Hall Head—Gutter Piece (3x3x3 NPK) (B3439)													
	0	3	6	0	4	8	0	1	2				
Spring Plants													
Cane ..	23.6	107	99	24.5	102	92	23.2	100	111	22.1	—	—	—
Sucrose ..	13.2	98	96	12.9	99	102	12.6	102	108	5.3	—	—	5.5
Sugar..	3.1	104	95	3.2	101	93	2.9	102	119	23.9	—	—	—
50. Sevens—Parnassus—Section 82 (3x3x3 NPK) (B41227)													
	0	2	4	0	3	6	0	1	2				
Spring Plants													
Cane ..	25.3	104	112	27.2	100	94	27.9	91	95	16.8	—	—	—
Sucrose ..	10.3	106	101	10.6	96	106	10.6	97	101	6.3	—	—	—
Sugar..	2.6	110	113	2.9	96	95	3.0	88	96	16.8	—	—	—
1st Ratoons													
Cane ..	30.9	110	128	35.6	101	91	36.3	96	91	16.2	18.3	—	—
51. United Estates—Enfield—Section 10 (3x3x3 NPK) (B41227)													
	0	2	4	0	1½	3	0	1	2				
Fall Plants													
Cane ..	59.9	101	101	59.7	98	105	53.0	117	124	8.1	—	—	9.2
Sucrose ..	11.3	96	97	11.6	96	89	10.8	104	102	11.2	—	—	—
Sugar..	6.8	97	98	7.0	93	94	5.7	121	127	12.5	—	—	14.6
52. United Estates—New Hall—Abbey 1 (4x3x2 NPK) (B41227)													
	0	2	4	6	0	1½	3	0	2				
Fall Plants													
Cane ..	65.1	105	114	111	72.2	97	94	70.4	99	9.3	—	—	—
Sucrose ..	9.7	105	108	108	9.9	110	99	9.8	107	14.3	—	—	—
Sugar..	6.3	110	123	122	7.1	107	94	7.0	105	15.7	24.5	—	—
1st Ratoons													
Cane ..	31.9	126	158	157	44.9	95	93	42.2	104	10.9	20.1	—	—
Sucrose ..	14.0	103	98	101	14.0	101	100	13.7	105	3.5	—	—	3.4
Sugar..	4.5	129	155	159	6.3	95	92	5.8	109	10.8	19.9	—	—
53. United Estates—New Hall—Newmans 4 (4x3x2 NPK) (B42231)													
	0	2	4	6	0	1	2	0	2				
Fall Plants													
Not reaped as plants													
1st Ratoons													
Cane ..	27.1	124	151	159	37.1	96	97	35.0	107	5.4	9.8	—	5.4
54. United Estates—New Works—Section 6 (3x3x3 NPK) (B41227)													
	0	2	4	0	1½	3	0	1	2				
Fall Plants													
Cane ..	69.4	110	114	74.2	102	102	73.0	111	98	11.6	12.6	—	—
Sucrose ..	11.5	92	99	11.4	94	99	11.4	93	101	7.9	—	—	—
Sugar..	8.0	100	113	8.4	96	100	8.2	103	99	11.3	11.9	—	—
55. United Estates—New Works—Section 27 (3x3x3 NPK) (B41227)													
	0	2	4	0	1½	3	0	1	2				
Fall Plants													
Cane ..	57.9	105	112	57.3	111	109	52.8	120	127	12.5	13.3	—	—
Sucrose ..	11.4	107	109	12.0	101	99	11.8	99	107	9.0	—	—	—
Sugar..	6.6	111	121	6.9	112	108	6.2	119	135	14.8	16.5	—	17.5
56. United Estates—White Water—Section 9 (3x3x3 NPK) (B4362)													
	0	2	4	0	1	2	0	1	2				
Spring Plants													
Cane ..	39.4	116	121	41.6	116	103	42.0	109	108	14.3	16.1	—	—
Sucrose ..	14.3	100	101	14.3	101	100	14.4	98	100	4.6	—	—	—
Sugar..	5.6	117	123	5.9	110	102	6.0	107	108	11.5	13.1	13.3	—

	Cwt. per acre									S.E. % g.m.	Significant difference		
	Sulphate of ammonia (N)			18% superphosphate (P)			Muriate of potash (K)				(N)	(P)	(K)
57. United Estates—Windsor Park—Section 5 (3x3x3 NPK) (B42231)													
	0	3	6	0	1½	3	0	1	2				
Spring Plants													
Cane	26.2	118	118	27.9	106	109	28.8	101	104	10.6	11.9	—	—
Sucrose ..	12.1	101	104	12.4	97	102	12.1	105	100	8.5	—	—	—
Sugar	3.2	121	123	3.4	104	111	3.5	106	105	16.1	18.4	—	—
1st Ratoons													
Cane	28.1	125	133	33.1	104	101	32.5	103	108	6.8	8.2	—	7.1
Sucrose ..	14.2	98	98	13.7	102	106	14.1	102	98	3.9	—	4.1	—
Sugar	4.0	124	132	4.5	107	107	4.6	105	106	9.0	10.7	—	—
58. United Estates—Windsor Park—Section 10 (B4362)													
	0	2	4	0	1	2	0	1	2				
Spring Plants													
Cane	31.6	112	131	35.4	107	100	35.0	102	108	9.4	10.8	—	—
Sucrose ..	16.3	101	100	16.4	100	100	16.4	99	100	3.8	—	—	—
Sugar	5.2	111	130	5.8	106	101	5.7	101	109	9.2	10.5	—	—
59. United Estates—Windsor Park—Section 19 (B4362)													
	0	2	4	0	1	2	0	1	2				
Fall Plants													
Cane	64.9	97	91	63.4	101	93	58.3	107	113	14.6	—	—	—
60. Vale Royal—Berkshire—Still House (3x3x3 NPK) (B34104)													
	0	2	4	0	4	8	0	1½	3				
Fall Plants													
Cane	33.9	109	109	35.8	100	102	35.1	103	105	9.3	—	—	—
Sucrose ..	11.6	92	95	11.0	99	106	11.3	94	100	9.1	—	—	—
Sugar	4.0	100	104	4.0	100	108	4.0	98	107	15.9	—	—	—
1st Ratoons													
Cane	12.4	108	99	13.1	96	94	10.4	131	136	14.8	—	—	18.2
Sucrose ..	12.8	92	92	11.4	111	107	11.2	109	113	12.8	—	—	—
Sugar	1.6	98	90	1.5	108	102	1.2	140	156	16.4	—	—	16.4
2nd Ratoons													
Cane	5.8	123	150	8.2	87	77	5.4	165	136	35.7	44.5	—	48.0
61. Vale Royal—Georgia—Dunn Piece (3x3x3 NPK) (Co421)													
	0	2	4	0	3	6	0	1	2				
Spring Plants													
Cane	32.8	108	99	32.4	103	107	31.8	112	105	8.8	—	—	9.3
Sucrose ..	12.9	97	96	12.3	104	103	12.5	100	101	4.4	—	—	—
Sugar	4.2	105	96	4.0	107	110	4.0	111	105	10.2	—	—	—
1st Ratoons													
Cane	26.1	99	96	26.1	97	97	24.8	104	107	6.8	—	—	7.1
2nd Ratoons													
Cane	25.2	95	96	24.6	102	97	23.4	109	105	10.6	—	—	—
62. Vale Royal—Hampshire—Village 4 (3x3x3 NPK) (Co421)													
	0	2	4	0	4	8	0	1	2				
Spring Plants													
Cane	24.6	96	92	24.6	96	93	20.1	124	130	21.5	—	—	25.4
Sucrose ..	12.0	102	101	12.1	102	100	11.8	104	105	5.4	—	—	—
Sugar	3.0	98	92	3.0	97	93	2.4	128	135	20.2	—	—	19.6
1st Ratoons													
Cane	34.1	99	99	32.3	112	102	31.5	109	113	11.4	—	—	12.3
2nd Ratoons													
Cane	29.2	97	108	30.9	98	91	29.1	102	105	10.3	—	—	—
63. Vale Royal—Oxford—Top Fisher (3x3x3 NPK) (Co421)													
	0	2	4	0	2	4	0	1	2				
Fall Plants													
Cane	18.5	89	87	16.8	96	100	13.9	123	133	11.0	9.9	—	13.2
Sucrose ..	13.8	93	96	13.4	98	99	12.9	105	103	6.1	—	—	—
Sugar	2.6	77	84	2.3	94	99	1.9	128	137	13.4	11.7	—	16.4
1st Ratoons													
Cane	21.5	86	90	19.9	97	101	16.9	119	131	12.0	11.1	—	14.1
2nd Ratoons													
Cane	12.6	76	77	10.8	99	98	8.1	150	142	19.6	16.6	—	25.8

MISCELLANEOUS FERTILIZER EXPERIMENTS

(i) NITROGEN EXPERIMENTS

	Cwt. per acre sulphate of ammonia (N)				S.E. % g.m.				Significant difference			
64. Monymusk—Exeter—Section 68 (B42231)												
(A)												
	0	2½	5	7½								
Spring Plants												
Cane	33.6	106	114	119				10.9			23.8	
Sucrose	12.7	93	101	101				3.2			—	
Sugar	4.3	104	115	119				12.8			—	
	0	2½	5	7½	0	2½	5	7½	(A)	(B)	(A)	(B)
1st Ratoons												
Cane	38.2	96	108	108	34.2	107	111	114	10.7	11.8	—	—
Sucrose	10.9	103	106	100	11.0	99	103	101	4.7	3.6	—	—
Sugar	4.2	99	113	108	3.8	106	114	114	7.8	13.5	—	—
	0	2½	5	7½	0	2½	5	7½				
2nd Ratoons												
Cane	40.0	110	109	99	39.4	124	110	102	11.8	15.9	—	—
Sucrose	10.8	101	101	94	9.8	104	97	109	3.7	3.8	—	6.8
Sugar	4.3	111	110	93	3.8	130	108	111	13.2	16.9	—	—
65. Monymusk—Salt Savannah—Dolly (B42231)												
(A)												
	2	4	6	8								
Fall Plants												
Cane	43.4	107	96	115					15.6		—	
Sucrose	12.2	93	94	93					8.3		—	
Sugar	5.3	100	92	108					15.4		—	
	2	4	6	8	2	4	6	8	(A)	(B)	(A)	(B)
1st Ratoons												
Cane	30.2	134	128	150	31.8	119	125	158	4.9	2.9	10.8	6.1
Sucrose	11.1	92	95	84	10.6	100	99	98	8.9	5.1	—	—
Sugar	3.3	124	120	126	3.4	119	122	137	16.0	7.5	—	15.4
	2	4	6	8	2	4	6	8				
2nd Ratoons												
Cane	34.1	93	88	106	29.6	91	93	94	14.0	24.2	—	—
Sucrose	10.4	94	96	96	9.9	97	95	96	5.7	6.0	—	—
Sugar	3.6	87	84	102	2.9	89	89	90	17.4	25.6	—	—
66. New Yarmouth—Caswell Hill—Section 57 (B41227)												
(A)												
	0	2	4	6								
Fall Plants												
Cane	39.6	101	117	152					5.5		11.2	
Sucrose	10.9	105	100	90					4.7		8.0	
Sugar	4.3	106	117	138					9.4		18.7	
67. New Yarmouth—Rowington—Section 70 (B34104)												
(A)												
	0	2	4	6								
Spring Plants												
Cane	48.8	96	94	89					13.4		—	
Sucrose	8.8	98	93	105					13.1		—	
Sugar	4.3	94	88	94					19.1		—	
	0	2	4	6	0	2	4	6	(A)	(B)	(A)	(B)
1st Ratoons												
Cane	41.8	114	113	109	42.7	105	115	112	11.7	6.9	—	—
Sucrose	10.1	100	103	99	10.1	97	96	94	7.3	7.2	—	—
Sugar	4.2	114	113	108	4.3	101	111	105	16.3	5.9	—	—
	0	2	4	6	0	2	4	6				
2nd Ratoons												
Cane	36.8	94	108	95	No weights recorded				12.5		—	
68. Sevens—Parnassus—Section 11 (B3439)												
(A)												
	0	2	4	6								
Spring Plants												
Cane	33.9	113	101	111					16.0		—	
Sucrose	13.9	95	99	97					4.7		—	
Sugar	4.7	108	100	108					20.4		—	
	0	2	4	6	0	2	4	6	(A)	(B)	(A)	(B)
1st Ratoons												
Cane	40.5	107	112	108	30.1	130	91	100	9.1	27.3	—	—
Sucrose	12.4	103	100	102	13.2	99	101	100	5.0	8.7	—	—
Sugar	5.0	111	112	111	4.0	128	89	97	10.5	21.6	—	—
	0	2	4	6	0	2	4	6				
2nd Ratoons												
Cane	35.4	87	113	117	22.7	123	106	113	13.4	26.3	—	—

(ii) PHOSPHATE EXPERIMENTS

69. Frome—Masenure—Retrieve—New Hope (B34104)

Table 1. Promote-Massacre-Kelley-Kelley-New Hope (2010)											
		(A) Cwts./acre 18% superphosphate						S.E. % g.m.	Significant difference		
		0	3	6					A	B	C
Fall Plants		Direct effect on plants									
Cane	.. ..	28.2	109	111				8.6	---	---	---
Sucrose	.. ..	13.9	100	96				6.7	---	---	---
Sugar	.. ..	3.9	109	108				6.9	---	---	---
		(B) Residual effect from plant applic'n			Direct effect on 1st R.			S.E. % g.m.	Significant difference		
		0	3	6	0	3	6		A	B	C
1st Ratoons		Direct effect on 1st R.									
Cane	.. ..	19.9	105	102	19.9	103	105	13.8	---	---	---
Sucrose	.. ..	12.3	96	96	12.0	99	99	6.7	---	---	---
Sugar	.. ..	2.4	102	98	2.4	103	105	13.3	---	---	---
		(C) Residual effect from 1st R. appl'n			Direct effect on 2nd R.			S.E. % g.m.	Significant difference		
		0	3	6	0	3	6		A	B	C
2nd Ratoons		Direct effect on 2nd R.									
Cane	.. ..	29.6	107	100	29.0	103	109	8.5	---	---	---
Sucrose	.. ..	13.1	98	97	12.6	103	104	9.5	---	---	---
Sugar	.. ..	3.9	105	97	4.0	96	98	13.0	---	---	---

70. Jamaica Sugar Estates—Chiswick 3 (B4362)

		(A) Cwts./acre 18% superphosphate					S.E. % g.m.	Sig. Diff.	
		0	2	4				A	
		Direct effect on plants							
Fall Plants									
Cane	.. ..	27.6	111	116			11.1	12.1	

71. United Estates—New Works—Blue Pond (B4339)

11. United States-New World Cane Field (1910)											
		(A) Cwts./acre 18% superphosphate						S.E. % g.m.	Significant difference		
		0	3	6					A	B	C
		Direct effect on plants									
		Not reaped									
		Residual effect from plant appl.			(B) Direct effect on 1st R.			S.E. % g.m.	Significant difference		
		0	3	6	0	3	6		A	B	C
1st Ratoons											
Cane	.. ..	34.1	109	111	34.3	106	112	7.4	7.8	7.8	
Sucrose	.. ..	12.5	101	100	13.2	94	92	4.4	—	—	
Sugar	.. ..	4.3	111	111	4.5	100	102	12.2	—	—	
					(C) Residual effect from 1st R. appl.			S.E. % g.m.	Significant difference		
		0	3	6	0	3	6		A	B	C
2nd Ratoons											
Cane	.. ..	32.9	101	98	31.4	105	108	10.2	—	—	—
Sucrose	.. ..	14.6	98	101	14.9	97	96	7.1	—	—	—
Sugar	.. ..	4.8	98	98	4.7	102	104	14.7	—	—	—

(iii) POTASH EXPERIMENTS

72. Frome—Barham—Newland 2 (B34104)

		(A) Cwts./acre muriate of potash						S.E. % g.m.	Significant difference		
		0	1	2					A	B	C
Spring Plants		Direct effect on plants									
Cane	.. ..	23.0	113	109				6.9	7.3	—	—
Sucrose	.. ..	16.7	98	100				2.8	—	—	—
Sugar	.. ..	3.9	110	109				6.7	7.0	—	—
		(B) Residual effect from plant applic'n			Direct effect on 1st R.			S.E. % g.m.	Significant difference		
		0	1	2	0	1	2		A	B	C
1st Ratoons		Direct effect on 1st R.									
Cane	.. ..	31.1	99	103	29.1	113	110	6.5	—	6.9	
Sucrose	.. ..	13.5	99	103	13.4	102	102	4.4	—	—	
Sugar	.. ..	4.2	99	106	3.9	115	112	8.0	—	8.4	
		(C) Residual effect from 1st R. applic'n			Direct effect on 2nd R.			S.E. % g.m.	Significant difference		
		0	1	2	0	1	2		A	B	C
2nd Ratoons		Direct effect on 2nd R.									
Cane	.. ..	23.8	104	101	23.6	104	104	8.6	—	—	9.2
Sucrose	.. ..	15.4	101	104	15.6	101	101	3.8	—	—	—
Sugar	.. ..	3.7	105	105	3.7	105	106	7.8	—	—	8.4

(iv) ARTIFICIAL AND ORGANIC AND LIMING EXPERIMENTS

73. Frome—Frome—Frome—Cuffy Hill (2) (4x4) (N, Bagasse, Filter Press Mud) (B41227)											
(A)					(B)						
Cwt. per acre sulphate of ammonia					Cwt. per acre sulphate of ammonia						
0 6 12 18					0 6 12 18					S.E. % g.m.	Significant difference
+ 50 tons/acre bagasse and 20 tons/acre filter press mud					+ 50 tons/acre bagasse					(A)	(B)
										(A)	(B)

80. Vale Royal—Oxford—Pond Piece (3x3x3 NPK and Mulch) (Co491)																			
	Cwt. per acre sulphate of ammonia			Cwt. per acre 18% super- phosphate			Cwt. per acre muriate of potash			No mulch		S.E. % g.m.		Significant difference					
	0	2	4	0	4	8	0	1	2			NPK	Mulch	N	P	K	M		
Fall Plants																			
Cane	..	..	25.4	108	102	27.6	91	94	23.9	113	116	22.8	128	16.8	19.9	—	—	13.1	13.1
Sucrose	..	..	12.3	97	97	11.8	102	105	11.6	105	118	11.9	104	8.8	9.7	—	—	—	—
Sugar	..	..	2.4	104	109	2.4	93	99	2.1	116	123	2.0	132	19.0	23.0	—	—	15.2	11.6
1st Ratoons																			
Cane	..	..	26.3	101	100	27.1	96	98	22.9	120	126	25.5	108	10.3	13.1	—	—	8.5	—
2nd Ratoons																			
Cane	..	..	11.6	103	96	16.4	92	93	12.4	135	143	12.1	107	12.3	17.0	—	—	11.0	—
81. Worthy Park—Sunshine 4 (N, Molasses, K) (B37172)																			
	Spring Plants			1st Ratoons			2nd Ratoons			3rd Ratoons									
	Cane	Sucrose	Sugar	Cane	Sucrose	Sugar	Cane	Sucrose	Sugar	Cane	Sucrose	Sugar							
Control	..	..	..	9.3	13.3	1.3	13.2	14.3	1.9	14.6	14.2	2.0	13.0	13.4	1.8				
2 cwt. sulphate of ammonia per acre	..	..	..	121	98	113	123	101	124	116	96	114	127	101	128				
4	..	..	..	129	94	121	126	98	124	149	93	142	120	94	112				
6	..	..	..	121	100	121	122	100	123	131	92	124	105	98	103				
3 tons molasses per acre	..	..	..	109	98	105	92	103	95	96	98	96	103	101	104				
6	..	..	..	123	102	125	113	101	115	105	96	103	118	101	120				
9	..	..	..	151	95	143	119	101	120	108	97	107	114	101	115				
2 cwt. muriate of potash per acre	..	..	..	114	97	110	120	102	123	115	97	115	117	99	115				
4	..	..	..	107	101	111	104	102	107	102	97	101	126	103	129				
6	..	..	..	116	102	118	115	99	115	119	98	119	123	101	129				
2 cwt. S/A and 2 cwt. M/P per acre	..	..	..	119	100	118	132	100	132	143	97	142	148	100	147				
4	..	..	..	145	96	138	157	101	159	154	95	149	149	99	147				
6	..	..	..	155	97	150	168	101	170	167	94	168	161	101	161				
S.E. % g.m.	..	..	..	15.4	7.7	14.4	16.2	2.9	11.7	11.6	2.2	12.2	16.2	3.1	17.4				
Significant difference	..	..	..	56.6	5.6	25.4	20.4	—	20.8	24.3	3.5	24.8	34.0	5.3	34.9				

(v) METHOD AND TIME OF APPLICATION OF FERTILIZERS

82. Frome—Mint—Mint—Jamieson (NK method of application) (B37161)														
		Cwts./acre sulphate of ammonia			Cwts./acre muriate of potash			Method of application		S.E. % g.m.				
		2	4	6	1	1½	2	Dibbling	Broadcasting	NK	Method of application	Significant difference		
Spring Plants														
Cane	..	29.1	107	106	31.0	96	97	30.1	102	16.2	10.9	—	—	—
Sucrose	..	14.5	99	99	14.2	102	102	12.9	100	3.3	8.2	—	—	—
Sugar	..	4.2	107	105	4.4	98	100	4.9	100	15.9	11.7	—	—	—
1st Ratoons														
Cane	..	28.6	110	114	30.5	102	102	31.2	98	10.4	13.1	10.0	—	—
Sucrose	..	13.2	99	97	12.9	99	103	12.9	102	18.0	16.0	—	—	—
Sugar	..	3.8	109	109	3.9	104	107	4.0	98	14.1	12.4	—	—	—

83. Frome—Shrewsbury—Shrewsbury—River Piece 4 (4x3x3 N,K, time of application of K)																
		Cwt. per acre sulphate of ammonia				Cwt. per acre muriate of potash			Time of application			S.E. % g.m.		Significant difference		
		0	2	4	6	0	1½	3	A ₀	A ₁	A ₂			N	K	A
Fall Plants																
Cane	..	48.8	102	113	112	47.8	108	118	53.6	104	99	11.6	10.5	—	—	—
Sucrose	..	9.1	101	94	89	8.2	106	111	8.6	109	103	8.8	9.1	—	—	—
Sugar	..	4.5	103	106	99	4.0	113	132	4.6	115	101	12.0	10.3	—	—	—
1st Ratoons																
Cane	..	39.0	105	116	115	37.7	117	122	45.2	98	100	8.9	9.6	8.6	—	—
Sucrose	..	10.5	102	93	90	9.4	108	116	10.8	93	99	3.1	3.2	2.4	3.5	—
Sugar	..	4.1	108	110	105	3.6	128	141	4.9	94	99	9.9	—	10.4	—	—
2nd Ratoons																
Cane	..	35.8	111	120	124	36.3	113	123	44.7	96	93	8.9	10.0	8.5	—	—
Sucrose	..	12.9	97	90	91	10.5	110	113	12.2	91	97	6.4	6.7	5.1	—	—
Sucrose	..	4.3	109	109	115	3.8	125	138	5.5	80	90	11.5	—	11.9	—	—
A ₀ = All potash applied at planting and after reaping.																
A ₁ = " " " " jointing.																
A ₂ = ½ " " " planting and after reaping and ½ at jointing.																

A₀ = All potash applied at planting and after reaping.
A₁ = " " " " jointing.
A₂ = " " " " planting and after reaping and ½ at jointing.

PART 2
VARIETY X FERTILIZER EXPERIMENTS

1. Caymanas—Caymanas—T Piece (Variety x N x K)
CANE

Variety	CANE						SUCROSE											
	Cwt./acre sulphate of ammonia			Cwt./acre muriate of potash			M/P	Cwt./acre sulphate of ammonia			M/P	Cwt./acre sulphate of ammonia			M/P	Cwt./acre sulphate of ammonia		
	0	3	6	0	1	2		0	3	6		0	3	6		0	3	6
Fall Plants																		
B3439 ..	66.9	101	95	66.0	92	108	66.1	0	71.0	119	89	12.5	96	92	12.0	96	100	12.0
B4362 ..	118	139	124	136	126	125	129	1	107	104	113	105	101	97	102	98	109	105
B42231 ..	120	108	104	96	131	109	112	2	111	104	102	101	108	102	105	107	105	108
Mean ..	76.5	103	95	75.0	105	103	—	—	—	—	—	12.8	100	95	12.5	99	103	—
S.E. % g.m. ..							15.2								6.1			
Sig. Diff. ..				Variety	N	K	—					Variety	N	K	—			
				18.4			—											

SUGAR

Variety	CANE						SUGAR											
	Cwt./acre sulphate of ammonia			Cwt./acre muriate of potash			M/P	Cwt./acre sulphate of ammonia			M/P	Cwt./acre sulphate of ammonia			M/P	Cwt./acre sulphate of ammonia		
	0	3	6	0	1	2		0	3	6		0	3	6		0	3	6
Fall Plants																		
B3439 ..	8.4	97	87	7.9	90	111	8.0	0	9.0	114	90	15.3	87	93	14.1	102	103	14.3
B4362 ..	123	141	120	90	126	139	135	1	108	107	102	84	89	82	88	95	92	91
B42231 ..	123	115	105	111	143	117	121	2	115	110	99	73	68	70	86	76	67	76
Mean ..	9.7	102	90	9.1	104	106	—	—	—	—	—	13.1	95	95	12.9	100	95	—
S.E. % g.m. ..							11.8								9.7			
Sig. Diff. ..				Variety	N	K	—					Variety	N	K	—			
				14.7			—								9.2			

2. Caymanas—Farm 2—Section 12 (Variety x N x K)
CANE

Variety	CANE						SUCROSE											
	Cwt./acre sulphate of ammonia			Cwt./acre muriate of potash			M/P	Cwt./acre sulphate of ammonia			M/P	Cwt./acre sulphate of ammonia			M/P	Cwt./acre sulphate of ammonia		
	0	3	6	0	1	2		0	3	6		0	3	6		0	3	6
Fall Plants																		
B3439 ..	55.6	105	99	62.7	81	88	56.2	0	64.9	98	100	15.3	87	93	14.1	102	103	14.3
B4362 ..	131	132	149	125	122	118	135	1	95	91	96	84	89	82	88	95	92	91
B42231 ..	88	95	102	83	90	89	97	2	87	95	103	73	68	70	86	76	67	76
Mean ..	60.9	101	106	64.5	95	96	—	—	—	—	—	13.1	95	95	12.9	100	95	—
S.E. % g.m. ..							19.2								9.7			
Sig. Diff. ..				Variety	N	K	—					Variety	N	K	—			
				22.7			—								9.2			

SUGAR

Variety	CANE						SUGAR											
	Cwt./acre sulphate of ammonia			Cwt./acre muriate of potash			M/P	Cwt./acre sulphate of ammonia			M/P	Cwt./acre sulphate of ammonia			M/P	Cwt./acre sulphate of ammonia		
	0	3	6	0	1	2		0	3	6		0	3	6		0	3	6
Fall Plants																		
B3439 ..	8.5	92	92	8.9	82	89	8.0	0	8.5	96	98	15.3	87	93	14.1	102	103	14.3
B4362 ..	110	117	122	110	116	108	123	1	96	84	98	84	89	82	88	95	92	91
B42231 ..	73	65	70	72	68	59	73	2	86	93	88	73	68	70	86	76	67	76
Mean ..	8.0	97	101	8.3	95	91	—	—	—	—	—	13.1	95	95	12.9	100	95	—
S.E. % g.m. ..							12.8								9.7			
Sig. Diff. ..				Variety	N	K	—					Variety	N	K	—			
				13.4			—								9.2			

3. Frome—Barham—McKenzie 2 (Variety x Potash)
CANE

Variety	CANE						SUCROSE						SUGAR					
	Cwt./acre Muriate of potash			Cwt./acre Muriate of potash			Mean	Cwt./acre Muriate of potash			Mean	M/P	Cwt./acre Muriate of potash			Mean	M/P	M/P
	0	1	2	3	Mean	—		0	1	2	3		0	1	2	3		
Spring Plants																		
B34104 ..	31.7	102	105	96	31.9	—	16.3	103	101	104	16.6	—	5.2	104	106	100	—	5.3
B41227 ..	121	111	111	131	118	—	85	83	86	88	84	—	103	91	96	115	—	99
B42231 ..	88	97	98	92	93	—	85	87	87	86	85	—	75	84	85	79	—	79
B4362 ..	110	112	112	114	111	—	104	102	104	100	100	—	114	115	116	114	—	112
Mean ..	33.2	101	102	103	—	—	15.1	100	101	101	—	—	5.1	101	103	104	—	—
S.E. % g.m. ..							Potash	Potash	Variety				Potash	Potash	Variety			
Sig. Diff. ..							—	2.2	2.5				—	6.3	6.6			
1st Ratteons																		
B34104 ..	39.2	101	107	101	40.0	—	13.2	102	98	104	13.3	—	5.2	103	105	105	—	5.3
B41227 ..	128	133	119	147	129	—	97	97	95	102	97	—	125	129	113	150	—	125
B42231 ..	93	106	112	103	101	—	102	106	103	106	103	—	95	112	115	109	—	104
B4362 ..	109	113	117	119	112	—	117	115	111	113	113	—	127	130	130	134	—	126
Mean ..	42.2	105	105	109	—	—	13.6	101	98	102	—	—	5.8	106	103	112	—	—
S.E. % g.m. ..							Potash	Potash	Variety				Potash	Potash	Variety			
Sig. Diff. ..							6.7	2.9	2.9				7.3	7.3	8.8			
2nd Ratteons							—	3.1	3.1				—	—	—			
B34104 ..	36.3	100	115	103	37.9	—	13.2	113	105	110	13.0	—	4.5	112	119	112	—	4.9
B41227 ..	137	150	128	161	138	—	109	109	111	111	103	—	149	162	141	177	—	142
B42231 ..	106	117	121	112	109	—	114	113	118	120	109	—	120	132	142	133	—	119
B4362 ..	100	120	128	122	112	—	131	126	120	119	116	—	130	160	153	144	—	130
Mean ..	40.2	110	111	112	—	—	13.7	103	101	102	—	—	5.6	112	111	114	—	—
S.E. % g.m. ..							Potash	Potash	Variety				Potash	Potash	Variety			
Sig. Diff. ..							10.3	6.2	6.2				12.4	12.4	14.0			

4. Frome—Frome—Frome—Morris (Variety x Potash)

CANE						SUCROSE						SUGAR					
Variety	Cwt./acre Muriate of potash				Mean	Cwt./acre Muriate of potash				Mean	Cwt./acre Muriate of potash				Mean		
	0	1	2	3		0	1	2	3		0	1	2	3			
Spring Plants																	
B34104	32.7	97	102	96	31.5	14.1	97	91	94	13.4	4.6	95	94	81	4.3		
B41227	127	125	121	146	135	87	88	91	90	93	110	110	111	131	125		
B42231	87	105	96	92	97	91	92	93	90	96	79	91	89	84	93		
B4362	116	110	122	120	121	105	101	102	102	107	122	111	124	122	130		
Mean	35.1	101	103	103	—	13.4	99	99	98	—	4.7	99	102	101	—		
S.E. % g.m. ..	Potash					Potash					Potash						
Sig. Diff. ..	11.0					5.1					11.6						
1st Ratoons																	
B34104	38.0	102	103	108	39.2	12.6	76	88	102	11.4	4.8	77	92	110	4.6		
B41227	144	146	126	152	138	86	87	100	101	103	125	127	125	154	140		
B42231	121	124	131	120	120	106	102	104	105	115	127	127	136	126	136		
B4362	93	110	137	116	110	107	101	102	109	116	99	111	141	127	126		
Mean	43.4	105	109	109	—	12.5	91	99	105	—	5.4	98	110	114	—		
S.E. % g.m. ..	Potash					Potash					Potash						
Sig. Diff. ..	13.5					7.8					15.1						
2nd Ratoons																	
B34104	44.4	97	110	104	35.4	11.2	98	97	113	11.3	3.8	96	110	118	4.0		
B41227	173	166	190	184	173	111	96	114	105	104	191	159	216	192	179		
B42231	120	147	134	144	132	114	117	118	126	116	137	172	157	181	153		
B4362	116	138	108	120	108	125	126	128	130	125	146	175	139	155	145		
Mean	43.7	108	107	108	—	12.4	97	101	105	—	5.5	105	108	112	—		
S.E. % g.m. ..	Potash					Potash					Potash						
Sig. Diff. ..	10.6					9.1					12.0						
	Variety					Variety					Variety						
	14.8					8.8					18.5						

5. Jamaica Sugar Estates—Spanish Wood—Section 15 (Variety x P x K)

CANE												SUCROSE														
Variety	Cwt./acre 18% super- phosphate			Mean	M/P	Cwt./acre muriate of potash			Mean	M/P	Cwt./acre 18% super- phosphate			Mean	M/P	Cwt./acre muriate of potash			Mean	M/P	Cwt./acre 18% super- phosphate					
	0	3	6			0	1	2			0	3	6			0	1	2			0	3	6			
Spring Plants																										
B37172	32.4	102	90	31.6	0	36.5	90	85	11.5	91	100	9.7	127	118	11.1	0	10.8	95	104							
B42231	100	111	101	107	1	88	97	88	101	101	99	116	112	128	103	1	103	108	106							
B4362	118	90	102	106	2	94	82	87	89	107	99	117	114	120	102	2	105	116	107							
Mean	34.4	95	92	—		34.4	95	95	11.1	103	102	10.8	106	110	—											
S.E. % g.m.				10.73					S.E. % g.m.				10.3													
	Variety			P	K	Variety			P	K	Variety			P	K	Variety			P	K	Variety			P	K	
Sig. Diff.	—			—	—	—			—	—	—	—			—	—	—			—	—	—			—	—

SUGAR															
Variety	Cwt./acre 18% super- phosphate			Mean	M/P	Cwt./acre muriate of potash			Mean	M/P	Cwt./acre 18% super- phosphate				
	0	3	6			0	1	2			0	3	6		
Spring Plants															
B37172	3.6	95	91	3.7	0	4.0	89	88	1.8	89	84	92	1.8		
B42231	102	118	102	108	1	89	104	92	2	98	94	93	2		
B4362	108	99	102	106	2	98	94	93	2	98	94	93	2		
Mean	3.7	100	96	—		3.7	100	100			3.7	100	96		
S.E. % g.m.				15.7					15.7					15.7	
	Variety			P	K	Variety			P	K	Variety			P	K
Sig. Diff.	—			—	—	—			—	—	—			—	—

7. Monymusk—Morelands—Parkin Piece 5 (Variety x Nitrogen)

Variety	CANE					SUCROSE				SUGAR				
	Cwt./acre													
	Sulphate of ammonia													
	0	2	4	6	Mean									
Spring Plants														
B37161	24.9	108	115	107	26.7									
B41227	122	166	161	136	134									
B42231	88	123	142	108	107									
B4362	147	97	140	118	117									
Mean	28.4	108	120	102	—									
	Nitrogen					Variety								
S.E. % g.m.	19.6													
Sig. Diff.	18.7													

No juice figures

No juice figures

8. Worthy Park—Blythe Piece 1 (Variety x Nitrogen)

Variety	CANE					SUCROSE					SUGAR				
	Cwt./acre				Mean	Cwt./acre				Mean	Cwt./acre				Mean
	Sulphate of ammonia					Sulphate of ammonia					Sulphate of ammonia				
Spring Plants	0	2	4	6		0	2	4	6		0	2	4	6	
B41227	36.7	116	116	120	41.5	11.9	91	82	89	10.7	4.3	107	98	109	4.4
B42231	90	92	99	104	97	104	103	98	95	110	95	97	99	101	96
B43214	117	106	115	118	101	87	92	91	86	98	105	100	106	102	100
B4362	87	107	112	113	93	102	112	105	107	117	90	121	120	123	110
Mean	36.1	107	113	115	—	11.6	101	96	96	—	4.2	109	109	112	—
S.E. % g.m. ..	7.2					5.9					7.0				
Sig. Diff.	Nitrogen					Nitrogen					Nitrogen				
	8.5					8.5					8.0				
	Variety					Variety					Variety				
	7.2					6.7					7.6				

Nitrogen 6.7

Nitrogen 7.6

9. Worthy Park—Bulleet Tree 4 (Variety x Potash)

CANE					SUCROSE					SUGAR					
Variety	Cwt./acre Muriate of potash				Mean	Cwt./acre Muriate of potash				Mean	Cwt./acre Muriate of potash				Mean
	0	1	2	3		0	1	2	3		0	1	2	3	
Spring Plants															
B34104	24.9	98	111	97	25.4	13.4	89	94	100	12.8	3.3	88	105	97	3.3
B41227	128	130	131	117	124	89	95	97	97	98	115	123	126	110	121
B42231	102	102	107	115	104	99	96	102	97	103	100	98	109	112	107
B4362	122	122	113	120	117	108	100	103	103	108	131	122	116	124	126
Mean	28.1	100	102	99	—	13.2	96	101	101	—	3.72	97	103	100	—
Potash Variety															
S.E. % g.m.	9.3					4.7					10.5				
Sig. Diff.	5.5					2.5					12.7				
1st Ratoons															
B34104	40.8	98	97	99	40.2	10.3	99	92	104	10.2	4.8	85	78	89	4.2
B41227	148	133	149	140	145	126	107	110	107	114	184	124	139	130	158
B42231	119	116	106	124	118	118	123	128	128	125	95	110	101	95	142
B4362	92	101	98	91	97	118	125	119	120	122	123	124	116	137	114
Mean	46.9	98	98	99	—	11.9	98	97	99	—	5.8	90	90	94	—
Potash Variety															
S.E. % g.m.	7.8					5.9					14.5				
Sig. Diff.	9.4					6.2					19.9				
2nd Ratoons															
B34104	36.3	95	97	102	35.7	11.6	99	109	93	11.6	4.2	93	105	95	4.2
B41227	140	136	148	135	142	101	113	106	106	106	141	154	171	143	154
B42231	91	98	101	100	99	91	101	118	114	112	91	115	115	114	109
B4362	120	116	120	125	122	111	113	117	109	100	132	130	140	137	137
Mean	40.8	99	103	103	—	12.0	107	108	103	—	4.9	106	114	105	—
Potash Variety															
S.E. % g.m.	8.1					6.6					10.0				
Sig. Diff.	9.9					7.4					13.3				

10. Worthy Park—Mass Tommy (Variety x Potash)

CANE						SUCROSE						SUGAR					
Variety	Cwt./acre Muriate of potash				Mean	0	1	2	3	Mean	0	1	2	3	Mean		
Spring Plants	0	1	2	3		0	1	2	3		0	1	2	3			
B34104	11.5	121	118	148	14.0	12.9	104	100	99	13.0	1.5	126	117	144	1.8		
B37161	136	105	142	117	103	106	103	105	111	105	143	107	147	128	108		
B41227	154	182	164	232	150	86	112	113	114	101	147	193	163	238	152		
B4362	140	142	188	168	151	109	107	100	104	111	151	157	209	188	146		
Mean	15.2	104	116	126	—	13.2	103	101	104	—	2.2	108	118	131	—		
S.E. % g.m. ..	Potash					Potash					Potash						
Sig. Diff. ..	15.1					5.1					17.2						
1st Ratoons	Variety					Variety					Variety						
B34104	17.9	19.5				20.9					23.2						
B37161	—					—					—						
B41227	16.2	154	116	172	21.9	12.4	100	103	99	12.4	2.0	154	119	171	2.3		
B4362	157	140	174	183	151	99	100	101	97	99	156	141	177	178	118		
Mean	189	185	255	198	180	100	103	97	105	93	190	191	249	209	165		
S.E. % g.m. ..	214	253	217	292	153	100	100	96	80	101	215	253	210	233	162		
Sig. Diff. ..	26.7	111	116	128	—	12.3	101	100	95	—	3.3	112	114	119	—		
2nd Ratoons	Potash					Potash					Potash						
B34104	13.8	13.8				5.8					14.6						
B37161	16.7	20.3				—					20.7						
B41227	13.6	159	121	169	18.7	13.0	101	104	102	13.2	1.8	159	125	172	2.6		
B4362	150	155	174	185	121	105	102	103	102	101	158	161	179	188	124		
Mean	222	271	247	299	190	100	98	98	99	96	219	266	242	294	184		
S.E. % g.m. ..	236	198	230	231	163	102	104	102	105	102	242	207	235	244	187		
Sig. Diff. ..	24.2	111	109	125	—	13.2	99	100	100	—	3.2	110	108	124	—		
3rd Ratoons	Potash					Potash					Potash						
B34104	16.5	21.3				5.1					16.5						
B37161	16.5	21.3				—					21.4						
B41227	16.5	21.3				—					21.4						
B4362	16.5	21.3				—					21.4						
Mean	16.5	21.3				—					21.4						
S.E. % g.m. ..	Variety					Variety					Variety						
Sig. Diff. ..	14.0					14.0					14.0						

PART 3 **RESULTS OF VARIETY EXPERIMENTS**

A summary of the results of the variety experiments reaped in 1954 is presented below. Actual yields, in tons cane per acre, % sucrose and tons sugar per acre obtained by the standard variety, are quoted, and yields obtained from the other varieties are expressed as a percentage of the standard.

Variety	CANE			SUCROSE			SUGAR		
	P.	1st R.	2nd R.	P.	1st R.	2nd R.	P.	1st R.	2nd R.
IRRIGATED ESTATES									
1. Caymanas—Cow Park—Section 5 (fall planted 1950)									
B3439 ..	38.2	25.6	27.7	13.7	11.9	14.0	5.4	3.1	3.9
B37161 ..	147	177	164	102	103	104	146	181	170
B41227 ..	107	194	175	90	99	89	96	191	156
B42231 ..	102	186	158	107	112	97	107	207	154
B4226 ..	110	136	132	93	93	95	101	126	127
B4362 ..	114	180	172	113	116	89	125	208	170
S.E. % g.m. ..	6.6	11.4	14.1	9.2	5.3	8.2	8.0	15.0	13.4
Sig. Diff. ..	9.0	22.3	25.4	11.1	9.1	—	10.8	30.5	23.6
2. Caymanas—Farm II—Section 17E (fall planted 1950)									
B34104 ..	43.8	41.2	46.0	11.9	11.9	—	5.2	4.9	—
B37161 ..	115	78	69	115	107	—	132	85	—
B41227 ..	108	106	108	110	95	—	119	101	—
B42231 ..	112	97	90	110	110	—	123	107	—
B4226 ..	97	70	79	107	94	—	103	66	—
B4362 ..	109	106	88	115	115	—	126	123	—
S.E. % g.m. ..	10.1	16.9	14.9	6.0	34.7	—	10.7	20.3	—
Sig. Diff. ..	—	20.9	15.9	6.5	42.3	—	15.1	23.8	—
3. Caymanas—Phoenix Park—Little Dundas (fall planted 1950)									
* B34104 ..	42.5	47.7	45.6	10.8	9.1	—	4.6	4.3	—
B37161 ..	128	112	111	112	130	—	141	145	—
B41227 ..	111	114	118	112	113	—	125	130	—
B42231 ..	113	109	107	127	148	—	140	161	—
B4226 ..	99	97	92	100	111	—	100	108	—
B4362 ..	99	108	98	125	132	—	125	137	—
S.E. % g.m. ..	7.6	6.9	13.4	10.0	13.7	—	12.0	16.7	—
Sig. Diff. ..	9.9	8.9	16.9	10.8	20.1	—	17.8	26.1	—
4. Innswood—Warwick Castle—McVicar 10 (spring planted 1952)									
B34104 ..	44.6	28.6	—	11.6	12.5	—	5.2	3.6	—
B41227 ..	95	120	—	101	104	—	96	124	—
B42231 ..	89	120	—	99	97	—	89	116	—
B4362 ..	93	111	—	105	95	—	98	105	—
S.E. % g.m. ..	21.4	7.0	—	5.3	3.9	—	19.6	7.9	—
Sig. Diff. ..	—	11.8	—	—	5.7	—	—	11.7	—
5. Monymusk—Bog—Richard 2 (spring planted 1951)									
B37172 ..	49.6	51.3	50.1	10.3	7.5	9.0	5.2	3.9	4.4
B3439 ..	108	97	89	93	131	97	116	125	87
B37161 ..	115	105	101	105	120	90	109	124	92
B41227 ..	135	149	139	97	105	96	138	153	133
B42231 ..	113	122	124	100	120	95	112	149	119
B4362 ..	115	106	116	97	114	97	119	119	112
S.E. % g.m. ..	9.0	8.0	13.3	7.1	12.4	9.9	10.4	17.7	17.7
Sig. Diff. ..	12.3	11.0	17.9	—	17.1	—	14.6	27.3	22.9
6. Monymusk—Exeter—Section 64 (fall planted 1951)									
B34104 ..	29.9	26.1	—	10.1	9.8	—	3.0	2.5	—
B41227 ..	142	141	—	106	96	—	149	138	—
B42231 ..	117	134	—	108	111	—	127	150	—
B4362 ..	130	124	—	103	102	—	134	125	—
B4503 ..	108	114	—	86	90	—	93	105	—
M.Y.3 ..	97	93	—	102	96	—	99	89	—
S.E. % g.m. ..	10.2	18.1	—	6.2	8.1	—	11.5	18.4	—
Sig. Diff. ..	14.1	25.7	—	7.5	9.6	—	16.2	26.1	—

Variety	CANE			SUCROSE			SUGAR		
	P.	1st R.	2nd R.	P.	1st R.	2nd R.	P.	1st R.	2nd R.
7. Monymusk—Hillside—Ladell 3 (fall planted 1952)									
B3439 ..	58.9			7.0			4.1		
B41227 ..	123			93			117		
B42231 ..	111			112			124		
B4362 ..	103			92			97		
POJ2878 ..	103			90			93		
MY3 ..	71			96			69		
S.E. % g.m. ..	15.9			10.9			17.0		
Sig. Diff. ..	19.5			14.0			20.5		
8. Monymusk—Hillside—Storehouse (spring planted 1951)									
B42231 ..	59.3	64.9	54.2	11.7	10.4	9.8	6.9	6.8	5.3
B41227 ..	90	108	118	76	94	96	70	101	116
B4362 ..	120	115	111	78	87	101	95	101	113
B44341 ..	71	78	86	79	96	103	56	75	89
B4503 ..	86	69	72	70	81	87	61	57	64
B46378 ..	90	80	90	85	81	98	77	65	89
B46384 ..	71	73	68	95	89	96	70	64	65
PR2 ..	97	63	54	84	98	116	83	62	63
PR3 ..	96	77	69	92	94	110	89	73	76
S.E. % g.m. ..	11.2	12.5	13.3	9.0	8.4	5.7	14.6	14.6	15.0
Sig. Diff. ..	9.9	10.4	16.5	10.4	—	8.4	11.0	11.0	18.8
9. Monymusk—Monymusk—Boothe Piece (fall planted 1950)									
B34104 ..	39.0	46.8	42.3	10.5	9.6	10.6	4.1	4.5	4.4
B37161 ..	144	117	105	110	105	105	158	123	111
B37172 ..	134	91	106	118	118	112	157	108	119
B41227 ..	131	125	155	106	110	105	137	137	130
B42231 ..	153	111	150	116	114	108	176	128	131
B4362 ..	162	131	132	109	105	95	175	138	136
S.E. % g.m. ..	12.0	9.1	21.4	12.7	7.0	10.3	18.4	11.0	17.0
Sig. Diff. ..	21.7	13.4	—	—	8.5	—	35.6	17.8	—
10. Monymusk—Morelands—Cotton Walk 3 (fall planted 1951)									
B37161 ..	64.4	47.2		8.4	8.5		5.3	3.9	
B41227 ..	114	125		103	100		116	124	
B42231 ..	100	101		114	115		116	119	
B4362 ..	84	94		102	105		87	97	
S.E. % g.m. ..	11.2	14.7		6.1	10.6		4.4	12.9	
Sig. Diff. ..	18.6	—		—			8.0	—	
11. Monymusk—Springfield—Section 24 (spring planted 1951)									
B34104 ..	29.6	31.6	19.3	11.7	8.8	10.2	3.5	2.8	2.0
B37161 ..	104	97	123	91	94	96	95	92	118
B37172 ..	85	67	99	104	85	98	88	57	96
B41227 ..	114	113	159	98	94	103	112	106	166
B42231 ..	86	94	129	96	103	99	82	97	129
B4362 ..	112	110	162	98	95	99	110	104	162
PR3 ..	71	81	65	100	92	108	71	74	70
POJ2727 ..	83	98	106	89	94	95	74	92	100
S.E. % g.m. ..	7.1	19.2	13.2	4.5	11.8	6.1	8.7	20.9	14.5
Sig. Diff. ..	6.9	18.9	16.2	4.8	—	—	8.2	19.5	17.7
12. Monymusk—Springfield—Carvers 2 (spring planted 1952)									
B37161 ..	46.4	45.2		10.0	9.5		4.6	4.3	
B41227 ..	130	106		107	93		125	100	
B42231 ..	105	106		107	98		110	106	
B4362 ..	108	104		95	104		81	109	
POJ2878 ..	106	85		98	101		101	86	
MY3 ..	82	82		92	91		75	74	
S.E. % g.m. ..	8.8	12.0		7.6	10.9		10.3	17.5	
Sig. Diff. ..	11.2	14.0		—	—		12.7	20.1	

Variety	CANE			SUCROSE			SUGAR		
	P.	1st R.	2nd R.	P.	1st R.	2nd R.	P.	1st R.	2nd R.
13. New Yarmouth—Caswell Hill—Section 39 (fall planted 1952)									
B3439 ..	59.8			14.3			8.6		
B37161 ..	144			86			124		
B41227 ..	146			93			135		
B42231 ..	127			102			129		
B4362 ..	127			98			123		
S.E. % g.m. ..	13.8			8.7			13.8		
Sig. Diff. ..	24.4			—			—		
14. New Yarmouth—Dry River—Section 39 (spring planted 1952)									
B3439 ..	25.5	21.3		13.1	—		3.3	—	
B37161 ..	115	127		96	—		112	—	
B41227 ..	103	133		97	—		100	—	
B42231 ..	119	166		95	—		114	—	
B4362 ..	107	154		96	—		102	—	
S.E. % g.m. ..	16.8	20.5		8.3	—		18.6	—	
Sig. Diff. ..	—	38.4		—	—		—	—	
15. New Yarmouth—Rowington—Section 34 (fall planted 1952)									
B3439 ..	34.6			11.2			3.9		
B37161 ..	103			94			97		
B41227 ..	104			94			100		
B42231 ..	116			106			122		
B4362 ..	104			98			101		
S.E. % g.m. ..	15.9			6.4			20.6		
Sig. Diff. ..	—			—			—		
16. Sevens—Parnassus—Sam Wint 6 (fall planted 1950)									
B3439 ..	33.9	40.6	28.3	14.5	14.3	12.0	4.9	5.8	3.5
B37161 ..	124	126	165	91	92	103	114	115	116
B41227 ..	121	149	159	88	89	98	106	134	154
B42231 ..	103	112	133	100	104	112	102	117	147
B4362 ..	99	130	148	105	103	108	103	135	158
S.E. % g.m. ..	14.5	15.5	17.5	4.2	3.7	7.2	14.2	16.1	18.5
Sig. Diff. ..	—	21.2	33.9	6.0	5.1	10.3	—	21.3	30.9
17. Sevens—Parnassus—Section 82 (spring planted 1952)									
B3439 ..	34.4	22.1		11.9	—		4.0	—	
B37161 ..	92	121		102	—		95	—	
B41227 ..	75	136		89	—		68	—	
B42231 ..	91	133		98	—		91	—	
B4362 ..	118	130		98	—		117	—	
S.E. % g.m. ..	7.0	15.7		5.0	—		13.7	—	
Sig. Diff. ..	9.2	—		—	—		17.8	—	
18. Sevens—Parnassus—Sandy Gully 6 (fall planted 1951)									
B3439 ..	47.3	23.0		12.0	—		5.7	—	
B37161 ..	102	165		85	—		87	—	
B41227 ..	109	152		86	—		95	—	
B42231 ..	118	174		102	—		120	—	
B4362 ..	92	163		98	—		90	—	
S.E. % g.m. ..	13.4	14.6		8.2	—		13.6	—	
Sig. Diff. ..	—	30.4		12.6	—		18.4	—	

HIGH RAINFALL AREAS

Variety	CANE					SUCROSE					SUGAR				
	P.	1st R.	2nd R.	3rd R.	4th R.	P.	1st R.	2nd R.	3rd R.	4th R.	P.	1st R.	2nd R.	3rd R.	4th R.
19. Appleton—Raheen—Salmon Piece (fall planted 1952)															
B37161 ..	67.6					12.3					8.3				
B37172 ..	96					109					105				
B41227 ..	116					98					113				
B42231 ..	100					106					106				
B43214 ..	108					90					98				
B4362 ..	101					106					107				
S.E. % g.m. ..	5.7					6.0					8.5				
Sig. Diff. ..	7.2					9.9					—				
20. Frome—Belle Isle—Paul Island—Shaw (fall planted 1948)															
B34104 ..	47.0	35.4	34.1	35.1	32.5	12.5	14.4	13.4	11.9	12.4	5.9	5.1	4.6	4.2	4.0
B4098 ..	120	115	113	107	96	113	97	104	101	110	136	111	116	108	106
B41226 ..	88	88	105	103	102	105	97	110	100	108	93	86	45	103	110
B41227 ..	129	114	149	159	167	98	99	107	106	108	127	113	157	167	180
S.E. % g.m. ..	8.7	15.1	7.7	11.2	16.0	10.8	6.6	5.1	8.5	3.6	11.4	11.7	9.5	15.8	15.2
Sig. Diff. ..	11.9	19.3	11.1	16.2	22.9	—	—	9.8	—	4.1	16.1	14.8	14.3	23.2	23.1
21. Frome—Frome—Blue Castle—Guthrie Pen 4 (spring planted 1952)															
B34104 ..	39.1	27.9				14.2	11.6				5.6	3.3			
B37161 ..	108	132				95	102				103	133			
B41227 ..	157	183				95	95				150	174			
B42231 ..	137	159				95	110				130	174			
B4362 ..	143	189				104	109				150	206			
S.E. % g.m. ..	9.1	7.2				5.0	7.0				11.2	14.0			
Sig. Diff. ..	19.1	17.8				8.2	8.2				23.1	36.0			
22. Frome—Masemure—Masemure—Hayles Piece (fall planted 1948)															
B34104 ..	45.6	41.8	39.8	42.2	36.6	12.5	14.2	13.2	11.8	11.8	5.9	6.0	5.3	5.0	4.34
B4098 ..	118	119	115	114	139	119	95	103	100	103	136	113	119	114	145
B41227 ..	123	132	146	147	179	95	97	103	99	109	113	128	149	145	193
B4381 ..	118	114	109	131	173	85	84	90	79	92	98	97	98	104	158
S.E. % g.m. ..	7.0	9.7	12.9	12.7	14.1	11.3	8.5	3.7	5.2	11.0	11.8	11.0	11.1	13.0	12.4
Sig. Diff. ..	9.9	13.9	10.3	19.2	25.6	14.1	11.2	4.6	6.8	—	16.2	14.8	15.9	18.6	22.8
23. Frome—Shrewsbury—Shrewsbury—Negro House (fall planted 1948)															
B34104 ..	36.1	35.6	33.8	33.4	35.7	10.2	14.1	12.9	11.2	12.4	5.9	6.0	5.3	3.8	4.3
B4098 ..	115	90	98	91	94	109	93	109	92	93	124	83	107	84	102
B41226 ..	120	113	116	105	97	105	79	113	89	87	131	91	131	94	108
B41227 ..	166	137	160	156	138	92	90	104	103	95	154	124	167	161	146
S.E. % g.m. ..	10.0	5.5	9.1	6.3	17.9	21.3	12.5	3.7	8.6	6.3	23.7	14.3	8.9	11.4	20.2
Sig. Diff. ..	15.5	7.5	13.3	8.8	15.7	—	17.1	4.3	11.1	4.8	—	17.6	13.7	15.2	18.9
24. Gray's Inn Central—Fort Stewart—Guinea Corn (spring planted 1952)															
B3439 ..	35.5	26.0				—	—				—	—			
B37172 ..	135	145				—	—				—	—			
B42231 ..	119	149				—	—				—	—			
B4362 ..	128	146				—	—				—	—			
S.E. % g.m. ..	11.5	21.9				—	—				—	—			
Sig. Diff. ..	—	—				—	—				—	—			
25. Gray's Inn Central—Gibraltar—Section 2 (spring planted 1952)															
B3439 ..	32.1	43.5				—	—				—	—			
B37172 ..	118	100				—	—				—	—			
B42231 ..	103	132				—	—				—	—			
B4362 ..	81	92				—	—				—	—			
S.E. % g.m. ..	19.3	12.3				—	—				—	—			
Sig. Diff. ..	—	22.5				—	—				—	—			

DRY NORTH COAST AREA

Variety	CANE					SUCROSE					SUGAR				
	P.	1st R.	2nd R.	3rd R.	4th R.	P.	1st R.	2nd R.	3rd R.	4th R.	P.	1st R.	2nd R.	3rd R.	4th R.
26. Long Pond—Hyde Hall—Cashew (spring planted 1953)															
B37161 ..	23.4					—					—				
B41227 ..	144					—					—				
B42231 ..	136					—					—				
B4362 ..	105					—					—				
B47361 ..	77					—					—				
B47419 ..	79					—					—				
Co331 ..	119					—					—				
POJ2878 ..	90					—					—				
S.E. % g.m. ..	14.6					—					—				
Sig. Diff. ..	22.9					—					—				
27. Long Pond—Long Pond—Fisher (fall planted 1952)															
B3439 ..	13.2					8.8					1.2				
B37161 ..	91					108					97				
B37172 ..	123					115					140				
B41227 ..	124					87					108				
B42231 ..	147					116					170				
B4362 ..	142					80					113				
Co421 ..	120					98					117				
S.E. % g.m. ..	10.1					10.0					16.1				
Sig. Diff. ..	13.3					10.9					21.2				
28. Richmond/Llandovery—Llandovery—Big Morass (fall planted 1952)															
B3439 ..	59.7					14.3					8.5				
B37161 ..	104					80					84				
B41227 ..	156					77					124				
B42231 ..	123					80					99				
B4362 ..	122					86					100				
B44254 ..	155					59					92				
B46293 ..	119					62					90				
B46384 ..	116					88					103				
S.E. % g.m. ..	12.4					11.3					22.1				
Sig. Diff. ..	18.0					14.1					—				
29. Richmond/Llandovery—Richmond—Cotton Tree 3 (spring planted 1951)															
Not reaped as plants															
B34104 ..	—	31.3	31.2			—	—	—	12.8		—	—	—	3.9	
B3439 ..	—	92	85			—	—	—	91		—	—	—	84	
B37161 ..	—	89	89			—	—	—	101		—	—	—	93	
B41227 ..	—	114	122			—	—	—	96		—	—	—	123	
B42231 ..	—	90	101			—	—	—	97		—	—	—	97	
B4362 ..	—	117	115			—	—	—	111		—	—	—	129	
B44182 ..	—	94	95			—	—	—	92		—	—	—	92	
B44254 ..	—	103	80			—	—	—	79		—	—	—	65	
B44341 ..	—	108	95			—	—	—	96		—	—	—	97	
B4503 ..	—	94	97			—	—	—	95		—	—	—	93	
B4506 ..	—	75	85			—	—	—	79		—	—	—	66	
B45151 ..	—	104	114			—	—	—	108		—	—	—	127	
B45155 ..	—	88	88			—	—	—	109		—	—	—	100	
B4642 ..	—	81	76			—	—	—	89		—	—	—	70	
B4647 ..	—	74	53			—	—	—	72		—	—	—	38	
B4699 ..	—	83	73			—	—	—	84		—	—	—	61	
B46136 ..	—	67	65			—	—	—	102		—	—	—	71	
B46151 ..	—	91	83			—	—	—	92		—	—	—	76	
B46293 ..	—	82	82			—	—	—	77		—	—	—	69	
B46295 ..	—	82	85			—	—	—	73		—	—	—	65	
B46308 ..	—	87	99			—	—	—	94		—	—	—	91	
B46339 ..	—	77	80			—	—	—	113		—	—	—	93	
B46378 ..	—	100	113			—	—	—	92		—	—	—	107	
B46384 ..	—	77	74			—	—	—	96		—	—	—	74	
B46391 ..	—	82	87			—	—	—	106		—	—	—	89	
S.E. % g.m. ..	—	7.1	12.5			—	—	—	11.6		—	—	—	16.4	
Sig. Diff. ..	—	10.7	18.9			—	—	—	6.1		—	—	—	24.0	

Variety	CANE			SUCROSE			SUGAR		
	P.	1st R.	2nd R.	P.	1st R.	2nd R.	P.	1st R.	2nd R.
30. Vale Royal—Hampshire—Village 4 (spring planted 1950)									
B37161 ..	18.1	23.0	13.3	12.5	—	—	2.3	—	—
B41227 ..	132	150	190	99	—	—	131	—	—
B42231 ..	112	95	121	104	—	—	118	—	—
B4362 ..	106	98	125	101	—	—	109	—	—
Co331 ..	157	183	210	96	—	—	151	—	—
Co421 ..	112	147	167	102	—	—	114	—	—
S.E. % g.m. ..	11.9	14.7	24.3	6.5	—	—	14.2	—	—
Sig. Diff. ..	17.2	22.9	29.2	—	—	—	20.6	—	—
31. Vale Royal—Vale Royal—Commodore (spring planted 1950)									
B34104 ..	36.9	37.6	26.9	14.0	14.4	—	5.2	5.4	—
B3439 ..	95	86	69	105	105	—	100	90	—
B37161 ..	109	121	100	101	94	—	110	113	—
B41227 ..	110	139	135	95	92	—	104	127	—
B42231 ..	115	100	92	105	102	—	121	102	—
B4362 ..	83	85	113	103	94	—	85	0	—
S.E. % g.m. ..	10.0	6.2	8.4	4.0	4.5	—	11.5	7.8	—
Sig. Diff. ..	12.3	7.8	10.3	11.8	5.3	—	14.3	9.6	—
MEDIUM RAINFALL—INLAND AREA									
32. United Estates—Windsor Park—Section 8 (spring planted 1952)									
B3439 ..	35.5	24.7		13.9	14.8		4.9	3.6	
B3172 ..	83	98		93	100		77	98	
B37161 ..	99	145		91	93		92	135	
B41227 ..	120	201		85	94		102	188	
B42231 ..	98	158		94	94		93	147	
B4362 ..	104	176		102	101		106	178	
S.E. % g.m. ..	8.5	8.6		5.6	5.4		9.8	10.5	
Sig. Diff. ..	10.2	15.2		6.3	6.3		11.2	17.9	

AVERAGES

(Figures in brackets represent number of experiments from which averages are obtained)

	CANE					SUCROSE					SUGAR				
	P.	1st R.	2nd R.	3rd R.	4th R.	P.	1st R.	2nd R.	3rd R.	4th R.	P.	1st R.	2nd R.	3rd R.	4th R.
Irrigated Estates															
B3439 ..	108 (1)	97 (1)	89 (1)			93 (1)	131 (1)	97 (1)			116 (1)	125 (1)	87 (1)		
B37161 ..	119 (12)	123 (10)	120 (7)			99 (12)	107 (7)	100 (5)			118 (12)	124 (7)	121 (5)		
B37172 ..	109 (2)	79 (2)	103 (2)			111 (2)	102 (2)	105 (2)			123 (2)	83 (2)	108 (2)		
B41227 ..	114 (18)	131 (15)	141 (8)			97 (18)	99 (12)	98 (6)			111 (18)	122 (12)	143 (6)		
B42231 ..	102 (3)	101 (3)	101 (3)			100 (3)	99 (3)	85 (1)			101 (3)	100 (3)	127 (1)		
B4362 ..	110 (17)	126 (14)	127 (7)			106 (17)	112 (11)	102 (5)			117 (17)	132 (11)	136 (5)		
B44341 ..	111 (18)	124 (15)	128 (8)			101 (18)	106 (12)	98 (6)			112 (18)	125 (12)	143 (6)		
B4503 ..	71 (1)	78 (1)	86 (1)			79 (1)	96 (1)	103 (1)			66 (1)	75 (1)	89 (1)		
B46378 ..	97 (2)	92 (2)	72 (1)			78 (2)	86 (2)	87 (1)			77 (2)	81 (2)	64 (1)		
B46384 ..	90 (1)	80 (1)	90 (1)			85 (1)	81 (1)	88 (1)			77 (1)	66 (1)	89 (1)		
MY3 ..	71 (1)	73 (1)	68 (1)			85 (1)	89 (1)	98 (1)			70 (1)	64 (1)	65 (1)		
PR2 ..	83 (6)	88 (2)				97 (3)	94 (2)				78 (3)	82 (2)			
PR3 ..	97 (1)	63 (1)	54 (1)			84 (1)	98 (1)	116 (1)			83 (1)	62 (1)	63 (1)		
POJ2727 ..	84 (2)	79 (2)	67 (2)			96 (2)	93 (2)	109 (2)			80 (2)	74 (2)	73 (2)		
POJ2878 ..	83 (1)	98 (1)	106 (1)			89 (1)	94 (1)	95 (1)			74 (1)	92 (1)	100 (1)		
	105 (2)	85 (1)				94 (2)	101 (1)				97 (2)	86 (1)			
High Rainfall Areas															
B37161 ..	108 (1)	132 (1)				95 (1)	102 (1)				103 (1)	133 (1)			
B37172 ..	116 (3)	123 (2)				109 (1)					105 (1)				
B4098 ..	118 (3)	108 (3)	109 (3)	104 (3)	110 (3)	114 (3)	95 (3)	105 (3)	98 (3)	102 (3)	132 (3)	102 (3)	114 (3)	102 (3)	108 (3)
B41226 ..	104 (2)	101 (2)	111 (2)	104 (2)	100 (2)	105 (2)	88 (2)	112 (2)	95 (2)	98 (2)	112 (2)	89 (2)	88 (2)	99 (2)	109 (2)
B41227 ..	138 (5)	142 (4)	152 (3)	154 (3)	161 (3)	96 (5)	95 (4)	105 (3)	103 (3)	104 (3)	131 (5)	135 (4)	158 (3)	168 (3)	173 (3)
B42231 ..	115 (4)	147 (3)				101 (2)	110 (1)				118 (2)	174 (1)			
B4362 ..	108 (1)					90 (1)					98 (1)				
B4381 ..	113 (4)	142 (3)				101 (2)	110 (1)				119 (2)	174 (1)			
	118 (1)	114 (1)	109 (1)	131 (1)	173 (1)	85 (1)	84 (1)	90 (1)	79 (1)	92 (1)	98 (1)	97 (1)	98 (1)	104 (1)	158 (1)

Variety	CANE			SUCROSE			SUGAR		
	P.	1st R.	2nd R.	P.	1st R.	2nd R.	P.	1st R.	2nd R.
Dry North Coast Area									
B3439 ..	95 (1)	89 (2)	77 (2)	105 (1)	105 (1)	91 (1)	100 (1)	90 (1)	84 (1)
B37161 ..	101 (3)	105 (2)	95 (2)	96 (3)	94 (1)	101 (1)	97 (3)	113 (1)	93 (1)
B37172 ..	123 (1)			115 (1)			140 (1)		
B41227 ..	133 (5)	134 (3)	149 (3)	90 (4)	92 (1)	96 (1)	117 (4)	127 (1)	123 (1)
B42231 ..	127 (5)	95 (3)	105 (3)	101 (4)	102 (1)	97 (1)	127 (4)	102 (1)	97 (1)
B4362 ..	112 (5)	100 (3)	118 (3)	93 (4)	94 (1)	111 (1)	102 (4)	80 (1)	129 (1)
B44182 ..	—	94 (1)	95 (1)	—	—	92 (1)	—	—	92 (1)
B44254 ..	155 (1)	103 (1)	80 (1)	59 (1)	—	79 (1)	92 (1)	—	65 (1)
B44341 ..	—	108 (1)	95 (1)	—	—	96 (1)	—	—	97 (1)
B4503 ..	—	94 (1)	97 (1)	—	—	95 (1)	—	—	93 (1)
B4506 ..	—	75 (1)	85 (1)	—	—	79 (1)	—	—	66 (1)
B45151 ..	—	104 (1)	114 (1)	—	—	108 (1)	—	—	127 (1)
B45155 ..	—	88 (1)	88 (1)	—	—	109 (1)	—	—	100 (1)
B4642 ..	—	81 (1)	76 (1)	—	—	89 (1)	—	—	70 (1)
B4647 ..	—	74 (1)	53 (1)	—	—	72 (1)	—	—	38 (1)
B4699 ..	—	83 (1)	73 (1)	—	—	84 (1)	—	—	61 (1)
B46136 ..	—	67 (1)	65 (1)	—	—	102 (1)	—	—	71 (1)
B46151 ..	—	91 (1)	83 (1)	—	—	92 (1)	—	—	76 (1)
B46293 ..	119 (1)	82 (1)	82 (1)	62 (1)	—	77 (1)	90 (1)	—	69 (1)
B46295 ..	—	82 (1)	85 (1)	—	—	73 (1)	—	—	65 (1)
B46308 ..	—	87 (1)	99 (1)	—	—	94 (1)	—	—	91 (1)
B46339 ..	—	77 (1)	80 (1)	—	—	113 (1)	—	—	93 (1)
B46378 ..	—	100 (1)	113 (1)	—	—	92 (1)	—	—	107 (1)
B46384 ..	116 (1)	77 (1)	74 (1)	88 (1)	—	96 (1)	103 (1)	—	74 (1)
B46391 ..	—	82 (1)	87 (1)	—	—	106 (1)	—	—	89 (1)
B47361 ..	77 (1)			—	—		—	—	
B47419 ..	79 (1)			—	—		—	—	
Co331 ..	138 (2)	183 (1)	210 (1)	96 (1)	—	—	151 (1)	—	—
Co421 ..	116 (2)	147 (1)	167 (1)	100 (2)	—	—	116 (2)	—	—
POJ2878 ..	90 (1)			—	—		—	—	

OVERALL AVERAGES

	CANE					SUCROSE					SUGAR				
	P.	1st R.	2nd R.	3rd R.	4th R.	P.	1st R.	2nd R.	3rd R.	4th R.	P.	1st R.	2nd R.	3rd R.	4th R.
B3172	83 (1)	98 (1)				93 (1)	100 (1)				77 (1)	98 (1)			
B3439	102 (2)	92 (3)	81 (3)			99 (2)	118 (2)	91 (2)			108 (2)	108 (2)	86 (2)		
B37161	114 (17)	122 (14)	114 (9)			98 (17)	106 (10)	100 (6)			112 (17)	125 (10)	117 (6)		
B37172	115 (6)	101 (4)	103 (2)			112 (4)	102 (2)	105 (2)			98 (4)	83 (2)	108 (2)		
B4098	118 (3)	108 (3)	109 (3)	104 (3)	110 (3)	114 (3)	95 (3)	105 (3)	98 (3)	102 (3)	132 (3)	102 (3)	114 (3)	102 (3)	118 (3)
B41226	104 (2)	101 (2)	111 (2)	104 (2)	100 (2)	105 (2)	88 (2)	112 (2)	95 (2)	98 (2)	112 (2)	89 (2)	88 (2)	99 (2)	109 (2)
B41227	122 (29)	136 (23)	80 (14)	164 (3)	161 (3)	95 (28)	98 (18)	100 (10)	103 (3)	104 (3)	115 (28)	129 (18)	145 (10)	168 (3)	173 (3)
B4226	102 (3)	101 (3)	101 (3)			100 (3)	99 (3)	95 (1)			101 (3)	100 (3)	127 (1)		
B4231	114 (27)	126 (21)	121 (10)			104 (24)	110 (14)	101 (6)			118 (24)	134 (14)	130 (6)		
B4362	111 (28)	126 (22)	125 (11)			100 (25)	105 (15)	100 (7)			110 (25)	129 (15)	141 (7)		
B4381	118 (1)	114 (1)	109 (1)	131 (1)	173 (1)	85 (1)	84 (1)	90 (1)	79 (1)	92 (1)	98 (1)	97 (1)	98 (1)	104 (1)	158 (1)
B43214	108 (1)					90 (1)					98 (1)				
B44182	—	94 (1)	95 (1)			—	—	92 (1)			—	—	92 (1)		
B44254	155 (1)	103 (1)	80 (1)			59 (1)	—	79 (1)			92 (1)	—	65 (1)		
B44341	71 (1)	93 (2)	90 (2)			79 (1)	96 (1)	100 (2)			66 (1)	75 (1)	93 (2)		
B4503	97 (2)	92 (3)	85 (2)			78 (2)	86 (2)	91 (2)			77 (2)	81 (2)	79 (2)		
B4506	—	75 (1)	85 (1)			—	—	79 (1)			—	—	66 (1)		
B45151	—	104 (1)	114 (1)			—	—	108 (1)			—	—	127 (1)		
B45155	—	88 (1)	88 (1)			—	—	109 (1)			—	—	100 (1)		
B4642	—	81 (1)	76 (1)			—	—	89 (1)			—	—	70 (1)		
B4647	—	74 (1)	53 (1)			—	—	72 (1)			—	—	38 (1)		
B4699	—	83 (1)	73 (1)			—	—	84 (1)			—	—	61 (1)		
B46136	—	67 (1)	65 (1)			—	—	102 (1)			—	—	71 (1)		
B46151	—	91 (1)	83 (1)			—	—	92 (1)			—	—	76 (1)		
B46293	119 (1)	82 (1)	82 (1)			62 (1)	—	77 (1)			90 (1)	—	69 (1)		
B46295	—	82 (1)	85 (1)			—	—	73 (1)			—	—	65 (1)		
B46308	—	87 (1)	99 (1)			—	—	94 (1)			—	—	91 (1)		
B46339	—	77 (1)	80 (1)			—	—	113 (1)			—	—	93 (1)		
B46378	90 (1)	90 (2)	102 (2)			85 (1)	81 (1)	95 (2)			77 (1)	65 (1)	98 (2)		
B46384	94 (2)	75 (2)	71 (2)			92 (2)	89 (1)	96 (2)			87 (2)	64 (1)	70 (2)		
B46391	—	89 (1)	87 (1)			—	—	106 (1)			—	—	89 (1)		
B47361	77 (1)					—					—				
B47419	79 (1)					—					—				
Co331	138 (2)	183 (1)	210 (1)			96 (1)	—	—			151 (1)	—	—		
Co421	116 (2)	147 (1)	187 (1)			100 (2)	—	—			116 (2)	—	—		
MY3	83 (3)	88 (2)				97 (3)	94 (2)				78 (3)	82 (2)			
PR2	97 (1)	63 (1)	54 (1)			84 (1)	98 (1)	116 (1)			83 (1)	62 (1)	63 (1)		
PR3	84 (2)	79 (2)	87 (2)			96 (2)	93 (2)	109 (2)			80 (2)	74 (2)	73 (2)		
POJ2727	83 (1)	98 (1)	106 (1)			89 (1)	94 (1)	95 (1)			74 (1)	92 (1)	100 (1)		
POJ2878	100 (3)	86 (1)				94 (2)	101 (1)				97 (2)	86 (1)			

INCOMPLETE BLOCK VARIETY EXPERIMENT

Variety	CANE		SUCROSE		SUGAR	
	P.	1st R.	P.	1st R.	P.	1st R.
1. Worthy Park—Banana Walk 1 (spring planted 1953)						
B4362	39.5		11.3		4.6	
B41227	100		87		82	
B48125	41		83		31	
B48126	66		81		52	
M336	77		103		76	
M112/134	71		94		64	
52	71		71		48	
64	83		91		72	
70	66		67		43	
77	67		89		51	
235	73		73		53	
433	83		87		72	
450	69		88		59	
S.E. % g.m. ..	23.4		11.0		23.0	
Sig. Diff. ..	25.3		13.7		20.7	

VARIETY LATTICE EXPERIMENTS. CANE. 1953 AND 1954 RESULTS

Note.—Actual yields in tons cane/acre are quoted for the standard variety, with the other varieties expressed as a percentage of the standard.

Percentage	Variety	(1)		(2)		(3)		(4)		(5)		(6)		(7)	
		Plants	1st ratoons	Plants	1st ratoons	Plants	1st ratoons	Plants	1st ratoons	Plants	1st ratoons	Plants	1st ratoons	Plants	1st ratoons
	Standard	25.9	20.8	25.1	20.4	25.0	20.9	22.8	17.6	24.0	21.7	28.9	23.8	19.9	21.5
B4146	A4	86	69	88	117	81	86	94	104	78	107	180	94	97	86
B42251	A5	64	150	118	105	61	84	53	123	56	39	114	115	193	106
	A6	98	198	98	71	95	107	64	104	79	101	81	88	98	68
	A17	—	—	90	95	78	95	78	106	44	67	96	91	61	100
	A20	181	278	118	148	110	186	111	117	90	135	110	108	187	108
	A29	161	161	91	100	106	107	71	83	70	85	92	94	61	75
	A31	96	6	78	188	84	107	99	137	105	106	160	88	154	97
	A39	89	188	118	180	58	190	98	149	110	142	84	65	118	100
	A34	124	199	100	81	96	118	82	113	84	69	101	92	144	79
	A49	108	222	78	108	87	107	74	98	70	74	87	98	104	82
B44841	B250	169	998	98	50	193	186	87	98	77	67	118	118	68	80
B4557	B204	148	937	118	91	119	160	97	98	90	69	114	80	104	102
	B208	140	215	110	86	108	97	89	108	88	184	79	184	181	78
	B287	198	244	113	120	127	177	78	100	91	64	163	89	69	101
	B279	118	900	114	101	180	135	105	104	108	118	185	90	129	81
B4559	C206	118	108	86	98	67	148	92	81	91	121	100	118	108	68
B4551	C306	118	19	114	190	128	107	98	98	88	88	104	111	80	92
	C209	108	140	77	99	109	68	70	77	67	88	98	60	117	59
	C309	48	19	90	42	76	132	66	94	65	95	95	61	57	63
	C309	114	144	119	88	78	92	81	89	88	80	106	104	147	87
	C311	198	98	87	98	96	101	68	88	82	81	136	94	121	91
	C316	98	0	86	71	86	76	84	58	67	66	88	82	64	54
	C329	138	138	116	108	88	99	108	87	130	92	101	188	88	88
	C324	84	14	79	90	87	184	99	99	99	84	111	88	86	82
	C326	110	149	68	62	76	111	79	70	82	68	99	98	74	78
	C328	78	74	118	80	90	76	76	78	81	98	65	74	78	78
	C327	91	91	105	99	81	80	98	109	96	65	106	69	189	75
	C329	98	84	197	84	96	98	88	104	86	92	75	90	140	64
	C340	144	190	77	111	140	108	97	109	89	99	180	118	160	89
	C356	7	17	94	84	109	99	45	89	91	90	70	124	80	80
	C340	89	189	118	99	92	156	95	117	119	105	123	99	171	81
	C341	99	0	75	108	77	75	96	58	80	85	86	98	65	62
B4589	B378	109	148	86	88	81	99	89	96	85	92	88	95	94	68
B4589	B389	125	219	81	64	91	137	56	118	71	84	116	81	158	77
	B395	0	48	87	96	87	156	116	116	107	116	80	181	185	92
	B404	88	88	87	70	96	112	98	167	72	98	85	74	119	75
B4597	B400	148	209	180	180	195	167	199	98	128	136	144	191	199	111
B4597	B453	120	161	—	—	—	—	—	—	—	—	—	—	—	—
	B455	118	967	98	116	190	127	80	71	66	70	116	94	82	50
	B456	180	179	89	81	144	159	72	109	88	75	148	102	63	49
	B459	169	100	160	160	165	165	165	116	128	116	161	172	95	—
	B458	141	186	128	150	198	108	129	174	115	60	131	104	104	111
	B474	124	211	187	108	114	114	102	79	85	95	140	27	146	75
	B476	87	107	99	118	85	125	96	100	73	139	124	94	151	91
	B478	88	107	148	104	138	96	116	158	86	107	163	184	168	101
	B481	88	49	168	95	69	114	87	99	87	90	81	119	92	83
	B488	114	147	116	105	96	118	97	108	110	78	115	84	108	85
	B498	67	140	111	98	74	138	119	125	81	100	109	86	129	96
B498	B504	90	108	110	158	90	127	120	118	94	96	99	107	182	85
B498	B576	188	177	88	99	78	111	86	70	76	76	89	94	65	88
	B588	84	45	46	199	98	112	78	85	53	48	77	71	47	80
	B408	90	10	119	74	84	196	91	127	93	99	101	98	90	77
	B405	95	259	115	78	92	112	98	91	99	99	109	107	151	64
	B407	188	175	88	150	90	76	118	100	100	90	91	90	161	68
B407	B489	87	40	100	198	119	126	99	90	88	122	110	85	89	100
B407	B489	160	257	160	100	191	191	126	158	115	151	107	109	122	139
	B489	99	5	101	81	78	96	109	94	91	66	124	87	105	97
	B493	85	8	117	199	107	98	107	136	85	141	98	115	160	114
B493	B449	78	45	88	80	109	128	98	109	79	80	131	97	72	79
B493	B444	79	96	196	188	46	140	132	148	111	108	126	118	169	101
B493	B440	90	14	71	69	118	91	129	85	81	68	97	88	92	71
	B494	41	160	78	100	91	126	57	129	96	120	78	96	46	81
	B497	80	71	96	57	57	57	57	86	58	50	75	107	119	42
	B499	79	34	101	111	118	171	118	147	87	90	130	104	165	108
	B498	71	168	85	87	117	144	89	97	87	90	104	104	165	108
B498	B498	168	280	119	117	119	169	127	151	104	94	145	96	164	105
B498	B498	197	250	108	181	57	157	159	187	106	131	106	107	259	161
	B498	95	91	101	198	46	108	111	111	91	94	144	118	128	88
	B498	140	984	108	161	109	196	108	166	114	186	104	128	161	100
	B498	180	109	97	74	139	116	99	80	58	58	144	107	160	79
	B498	148	228	197	199	110	148	127	127	121	137	101	121	271	73
	B498	105	999	70	159	68	96	100	110	119	140	175	151	271	73
	B498	188	184	181	140	138	168	128	130	94	129	147	191	147	85
	B498	95	118	116	110	141	151	100	130	114	118	126	104	104	102
	B498	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	B498	119	194	188	159	98	146	122	191	110	171	107	106	214	188
	B498	110	267	100	190	73	126	95	81	85	106	132	140	83	99
	B498	141	195	120	114	107	186	124	164	111	130	109	143	183	181
	B498	164	986	127	140	87	129	84	70	101	68	108	121	64	92
	B498	169	364	120	117	158	88	94	176	98	59	134	116	164	187
	B498	64	188	180	190	—	—	76	76	75	104	167	104	76	119
	B498	97	47	95	117	129	58	89	89	168	109	179	185	166	119
B498	B498	19.0	24.6	28.0	26.8	29.5	27.7	14.8	10.8	16.2	21.8	18.8	21.0	—	21.3
B498	B498	—	—	—	24.6	29.4	28.1	27.1	28.5	29.0	28.8	20.9	41.8	—	37.5

KEY TO SITES

1. Vale Royal—Aradisa—Fulmar (DRY NORTH COAST)
2. Belmont Lodge—March Pen 2A
3. Caymanas—Phoenix Park—Reid Place
4. Inwood—Cotton Tree 22
5. Monymusk—Beauchamp—Long Acre
6. Monymusk—Canal Piece

Parentage	Variety	(8)		(9)		(10)		(11)		(12)		(13)		Island average	
		Plants	1st ratoons	Plants	1st ratoons	Plants	1st ratoons	Plants	1st ratoons	Plants	1st ratoons	Plants	1st ratoons	Plants	1st ratoons
	Standard	49.0	44.3	44.6	27.8	16.5	26.3	46.8	39.7	59.9	43.5	22.2	36.8	33.1	
B4145 x	A4	—	—	16	68	153	109	95	103	83	91	124	82	95	
B42231 x	A5	—	—	65	72	189	108	97	97	90	40	127	87	99	
	A14	—	—	63	94	112	87	49	42	111	59	96	81	88	
	A17	—	—	118	99	184	94	85	61	81	63	124	89	87	
	A26	92	108	77	100	226	94	134	105	91	143	199	126	132	
	A29	—	—	89	76	159	80	83	78	72	85	120	91	94	
	A81	—	—	94	89	147	119	99	71	44	90	98	99	91	
	A82	—	—	96	104	125	65	121	92	121	88	144	100	114	
	A84	—	—	80	68	149	62	89	89	100	86	115	103	97	
	A49	—	—	59	86	164	112	82	85	87	98	145	89	108	
B44341 x	B226	93	106	127	86	212	101	111	89	107	114	137	115	111	
B3337	B264	—	—	89	70	183	87	91	79	74	102	111	113	101	
	B266	95	102	90	71	201	112	100	81	100	66	79	112	97	
	B267	96	81	79	56	201	99	88	67	92	116	145	112	110	
	B270	—	—	82	88	225	110	96	79	62	72	145	119	108	
B3439 x	C295	—	—	74	82	118	125	97	78	103	85	101	93	101	
B42231	C296	—	—	62	81	248	81	119	83	80	108	166	107	95	
	C299	—	—	48	83	153	118	95	63	49	108	129	95	81	
	C300	—	—	64	116	159	83	95	62	49	109	109	84	74	
	C309	74	85	68	52	92	79	105	94	92	84	163	96	94	
	C311	—	—	81	93	239	85	103	65	85	79	120	110	81	
	C316	—	—	62	111	149	79	90	43	89	67	100	71	75	
	C322	—	—	109	95	208	113	125	93	104	84	126	109	96	
	C324	—	—	91	94	147	81	71	57	44	74	121	83	87	
	C325	—	—	86	79	107	105	93	63	64	62	83	83	83	
	C326	—	—	87	103	217	95	88	52	119	110	139	100	86	
	C327	—	—	89	102	219	122	100	76	49	107	104	110	88	
	C329	—	—	97	91	178	71	108	75	77	106	145	107	85	
	C330	94	94	129	109	211	70	128	105	95	160	166	129	113	
	C336	66	63	69	64	182	99	69	53	42	44	80	83	62	
	C340	78	82	76	118	143	89	84	77	67	87	126	105	105	
	C341	—	—	88	78	158	108	127	73	6	120	120	86	74	
B3439 x	D78	—	—	65	74	124	111	84	80	107	100	147	90	99	
B38192	D89	96	82	79	96	215	102	86	51	85	69	152	102	91	
	D96	—	—	99	86	115	70	126	91	7	113	177	101	88	
	D104	—	—	61	90	188	59	83	66	62	69	98	94	85	
B35207 x	E150	105	121	97	85	148	65	137	120	52	147	183	130	130	
POJ2878	E153	—	—	—	—	—	—	—	—	—	—	—	—	—	
	E165	—	—	79	107	194	145	119	94	86	90	168	120	164	
	E166	—	—	135	129	166	111	123	112	98	130	197	115	116	
	E162	—	—	86	72	190	124	111	127	75	133	231	133	149	
	E168	93	90	147	156	195	101	142	132	113	141	217	142	131	
	E174	100	89	137	121	232	105	100	77	66	137	172	129	108	
	E175	—	—	90	92	126	88	89	88	89	114	163	103	115	
	E178	—	—	108	135	172	61	119	117	81	131	219	122	99	
	E181	—	—	128	88	173	90	102	75	77	145	110	92	92	
	E183	—	—	105	119	153	101	130	70	66	86	144	111	102	
	E196	—	—	51	82	179	191	135	113	124	122	181	104	122	
B4362 x	F364	—	—	62	125	212	94	119	127	99	160	236	117	126	
B34104	F376	—	—	67	72	193	121	106	99	93	101	144	98	103	
	F388	110	121	92	73	182	106	80	76	84	92	164	83	91	
	F403	97	104	124	82	248	111	97	86	49	122	193	109	95	
	F405	—	—	95	80	186	84	113	101	101	126	163	115	105	
	F407	—	—	86	84	258	89	127	77	75	87	115	122	99	
B45170 x	G482	100	98	90	113	205	119	102	110	74	147	129	109	102	
B41227	G483	102	121	113	81	211	109	125	104	108	137	207	134	132	
	G489	97	92	82	88	273	89	94	107	50	117	187	111	88	
	G491	105	119	58	122	258	106	109	122	5	109	206	115	108	
B35206 x	H442	—	—	56	80	59	86	118	90	77	59	134	86	88	
POJ2878	H4444	86	111	94	134	191	101	138	146	62	103	200	114	117	
	H445	—	—	81	100	175	113	101	66	86	85	152	95	79	
	H454	—	—	65	89	195	110	106	120	38	115	185	88	170	
	H467	—	—	104	87	182	89	96	94	53	115	158	94	88	
	H459	126	131	112	117	160	106	104	126	106	123	177	119	113	
	H463	—	—	89	92	165	93	83	82	78	72	159	103	108	
Co421 x	I213	—	—	128	128	219	105	139	147	118	136	217	141	144	
B37193	I216	89	118	130	121	208	106	117	137	149	144	203	130	150	
B3439 x	J276	—	—	109	94	212	107	143	133	75	116	193	111	111	
Co419	J284	113	116	109	102	213	100	130	117	129	119	186	127	138	
	J285	—	—	80	90	176	100	116	112	139	134	176	112	104	
	B37161	—	—	120	101	191	89	141	129	118	130	156	135	128	
	B41227	—	—	130	142	232	118	142	154	131	156	228	147	150	
	B42231	117	102	90	107	178	117	120	130	80	159	148	132	128	
	B4362	112	128	130	117	252	135	139	134	75	165	226	134	126	
	B4747	93	126	92	74	169	75	119	143	42	106	174	124	132	
	B47258	—	—	103	93	159	146	108	118	87	124	194	108	125	
	B47306	90	97	64	94	181	105	114	127	128	162	217	125	140	
	B47310	—	—	118	96	112	110	120	106	102	103	184	106	124	
	B47320	—	—	141	107	124	104	110	112	87	127	142	127	126	
	B47361	—	—	87	79	155	100	99	89	84	119	193	104	113	
	B47419	—	—	53	71	215	90	120	117	62	153	197	121	100	
S.E. % g.m.		13.3	12.2	23.3	36.2	—	87.9	14.0	16.8	—	30.0	17.9	—	—	
Sig. Diff. ...		26.6	26.6	41.8	—	—	—	29.9	31.6	—	28.2	28.1	—	—	

Not reaped as plants

7. Jamaica Sugar Estates—Duckenfield
8. Jamaica Sugar Estates—Duckenfield 14 (only 27 varieties included) } (WET EAST)
9. Serge Island—Judy Gate
10. Appleton—York Piece and Holland—Pond Piece
11. Frome—Masemure—Golden Bottom and Retrieve—New Ground } (WET WEST)
12. United Estates—Wakefield—Section 10
13. Worthy Park—Gruber 1 } (INLAND)

VARIETY LATTICE EXPERIMENTS. % SUCROSE. 1953 AND 1954 RESULTS

Note.—Sucrose % cane obtained for the standard are quoted, with the other varieties expressed as a percentage of the standard.

Parentage	Variety	(1)		(2)		(3)		(4)		(5)		(6)		(7)	
		Plants	1st ratoons	Plants	1st ratoons	Plants	1st ratoons	Plants	1st ratoons	Plants	1st ratoons	Plants	1st ratoons	Plants	1st ratoons
B4145 B42231	Standard	13.7	(12.4)	12.0	—	12.6	—	—	—	10.6	(10.9)	11.3	(8.0)	—	—
	A4	60	58	88	—	91	—	—	—	73	74	91	103	—	—
	A6	50	93	85	—	83	—	—	—	95	92	84	105	—	—
	A14	80	125	78	—	92	—	—	—	98	90	95	129	—	—
	A17	—	—	87	—	91	—	—	—	89	86	86	121	—	—
	A26	81	82	92	—	94	—	—	—	98	94	93	94	—	—
	A29	68	92	92	—	99	—	—	—	90	107	100	130	—	—
	A31	87	84	138	—	103	—	—	—	118	112	85	180	—	—
	A32	77	89	105	—	96	—	—	—	75	83	89	116	—	—
	A34	86	97	107	—	101	—	—	—	94	92	—	—	—	—
B44341 B3337	A49	80	91	112	—	72	—	—	—	82	85	82	123	—	—
	B226	85	98	110	—	88	—	—	—	68	86	97	98	—	—
	B264	60	70	81	—	70	—	—	—	83	94	91	86	—	—
	B266	76	90	90	—	102	—	—	—	95	97	91	116	—	—
	B267	44	67	95	—	88	—	—	—	83	57	88	114	—	—
	B270	60	84	64	—	108	—	—	—	70	101	94	116	—	—
	C295	88	82	98	—	106	—	—	—	83	112	107	85	—	—
	C296	62	89	92	—	101	—	—	—	81	79	92	103	—	—
	C299	85	99	109	—	99	—	—	—	102	87	97	121	—	—
	C300	78	85	77	—	97	—	—	—	74	39	—	110	—	—
B3439 B42231	C309	93	96	97	—	96	—	—	—	108	79	93	45	—	—
	C311	62	61	63	—	82	—	—	—	80	90	100	91	—	—
	C316	84	—	110	—	108	—	—	—	97	66	108	145	—	—
	C322	75	88	94	—	98	—	—	—	92	121	88	114	—	—
	C324	85	92	120	—	85	—	—	—	109	82	94	137	—	—
	C325	83	118	111	—	99	—	—	—	96	104	104	124	—	—
	C326	96	107	106	—	103	—	—	—	98	85	101	98	—	—
	C327	84	74	101	—	98	—	—	—	85	60	98	111	—	—
	C329	98	82	98	—	94	—	—	—	87	92	96	97	—	—
	C330	78	100	101	—	88	—	—	—	90	101	84	112	—	—
B3439 B38192	C336	83	82	112	—	97	—	—	—	92	81	88	121	—	—
	C340	72	86	98	—	94	—	—	—	75	80	117	—	—	—
	C341	70	0	110	—	98	—	—	—	90	35	100	131	—	—
	D78	72	80	105	—	105	—	—	—	91	79	94	123	—	—
	D89	94	97	106	—	98	—	—	—	83	30	98	116	—	—
	D95	83	93	105	—	92	—	—	—	96	128	85	133	—	—
	D104	80	93	87	—	87	—	—	—	88	86	97	100	—	—
	E150	67	74	86	—	87	—	—	—	78	122	83	111	—	—
	E153	87	81	—	—	—	—	—	—	—	—	—	—	—	—
	E155	77	84	—	—	97	—	—	—	79	57	95	130	—	—
B35207 POJ2878	E160	83	87	86	—	84	—	—	—	71	58	100	90	—	—
	E162	84	95	117	—	107	—	—	—	99	134	108	146	—	—
	E168	72	69	95	—	90	—	—	—	72	38	99	84	—	—
	E174	74	77	89	—	79	—	—	—	87	102	88	122	—	—
	E175	81	81	104	—	90	—	—	—	85	116	76	107	—	—
	E178	69	100	96	—	84	—	—	—	96	95	92	107	—	—
	E181	70	83	66	—	93	—	—	—	79	57	80	91	—	—
	E183	75	76	87	—	70	—	—	—	75	63	79	103	—	—
	E196	74	84	81	—	68	—	—	—	76	81	80	101	—	—
	F364	88	106	73	—	98	—	—	—	91	91	101	122	—	—
B4362 B34104	F370	84	95	85	—	97	—	—	—	105	62	96	115	—	—
	F388	73	81	116	—	100	—	—	—	95	89	91	91	—	—
	F403	86	83	102	—	100	—	—	—	94	88	110	119	—	—
	F405	71	76	102	—	94	—	—	—	83	24	104	112	—	—
	F407	66	89	99	—	82	—	—	—	89	71	81	119	—	—
	G482	94	99	98	—	96	—	—	—	96	117	94	130	—	—
	G483	80	87	107	—	78	—	—	—	80	145	98	126	—	—
	G489	85	0	60	—	83	—	—	—	75	54	97	133	—	—
	G491	93	0	100	—	87	—	—	—	96	141	89	103	—	—
	H442	90	98	79	—	92	—	—	—	95	77	95	134	—	—
B35206 POJ2878	H444	92	93	110	—	108	—	—	—	96	106	100	121	—	—
	H445	70	77	94	—	88	—	—	—	84	64	104	124	—	—
	H454	89	93	86	—	92	—	—	—	85	76	97	105	—	—
	H457	70	88	107	—	76	—	—	—	74	57	79	109	—	—
	H459	83	89	91	—	73	—	—	—	75	43	81	145	—	—
	H463	85	86	88	—	102	—	—	—	94	85	91	100	—	—
	I213	46	75	88	—	93	—	—	—	81	85	86	109	—	—
	I216	66	85	94	—	82	—	—	—	95	134	98	116	—	—
	J276	35	35	116	—	63	—	—	—	98	77	100	112	—	—
	J284	59	78	99	—	87	—	—	—	86	129	89	125	—	—
Co421 B37193 B3439 Co419	J285	68	78	89	—	93	—	—	—	89	28	97	132	—	—
	B37161	81	103	113	—	104	—	—	—	91	145	100	102	—	—
	B41227	70	89	98	—	102	—	—	—	86	130	104	133	—	—
	B42231	97	114	102	—	103	—	—	—	94	132	101	121	—	—
	B4362	91	97	114	—	112	—	—	—	95	121	105	125	—	—
	B4747	—	—	—	—	74	—	—	—	—	—	—	—	—	—
	B47258	89	98	116	—	98	—	—	—	95	181	93	117	—	—
	B47306	73	94	84	—	84	—	—	—	93	85	100	107	—	—
	B47310	75	81	83	—	85	—	—	—	92	117	87	122	—	—
	B47312	44	86	65	—	76	—	—	—	82	50	96	134	—	—
S.E. % g.m. Sig. Diff. ..	B47320	66	98	97	—	81	—	—	—	101	57	95	104	—	—
	B47361	66	79	87	—	—	—	—	—	86	97	98	110	—	—
	B47419	71	84	108	—	106	—	—	—	86	72	80	118	—	—
		20.8	—	—	—	13.2	—	—	—	—	—	—	—	—	—

Parentage	Variety	(8)		(9)		(10)		(11)		(12)		(13)		Island average	
		Plants	1st ratoons	Plants	1st ratoons	Plants	1st ratoons	Plants	1st ratoons	Plants	1st ratoons	Plants	1st ratoons	Plants	1st ratoons
B4145	Standard	—	10.3	13.8	(10.8)	11.8	—	11.2	(11.3)	12.0	—	12.0	(11.8)	12.1	(10.9)
B42231	A4	—	—	91	86	144	—	62	68	106	71	87	82	87	82
	A5	—	—	60	94	133	—	85	80	123	76	96	82	98	98
	A14	—	—	81	72	107	—	83	108	126	102	98	91	107	107
	A17	—	—	104	120	123	—	83	89	131	98	101	95	108	108
	A26	—	76	85	109	122	—	86	93	109	80	100	92	95	95
	A29	—	—	76	91	115	—	86	102	114	85	106	90	106	106
	A31	—	—	87	117	111	—	108	103	133	88	105	108	112	112
	A32	—	—	66	99	126	—	71	89	116	91	102	89	99	99
	A34	—	—	76	91	108	—	73	83	97	85	108	91	87	87
	A49	—	—	59	115	97	—	75	101	126	73	89	81	105	105
B44341	B226	—	89	94	137	113	—	67	84	110	112	95	93	99	99
B3337	B264	—	—	64	114	121	—	71	102	—	90	89	81	93	93
	B266	—	101	82	85	125	—	84	101	121	91	98	93	101	101
	B267	—	89	95	113	113	—	89	87	135	85	105	87	96	96
	B270	—	—	73	100	98	—	85	78	91	81	109	80	97	97
B3439	C295	—	—	65	115	121	—	95	107	108	100	116	95	104	104
B42231	C296	—	—	94	115	137	—	91	108	148	111	104	96	107	107
	C299	—	—	58	98	118	—	70	103	119	96	109	93	105	105
	C300	—	—	56	74	120	—	44	90	146	83	83	79	91	91
	C309	—	97	88	97	90	—	108	126	112	111	109	99	101	101
	C311	—	—	38	71	131	—	73	64	136	76	75	89	84	84
	C316	—	—	70	104	131	—	86	90	113	106	109	103	98	98
	C322	—	—	84	106	139	—	93	89	148	91	110	95	111	111
	C324	—	—	76	121	135	—	91	101	128	87	118	98	111	111
	C325	—	—	83	74	127	—	80	93	126	106	117	99	84	84
	C326	—	—	99	87	107	—	108	97	105	109	96	103	96	96
	C327	—	—	97	107	121	—	85	112	142	76	100	94	101	101
	C329	—	—	80	106	124	—	87	99	136	112	103	97	102	102
	C330	—	98	82	105	113	—	87	113	107	105	105	93	110	110
	C336	—	106	82	105	129	—	99	109	95	92	114	97	102	102
	C340	—	93	71	85	128	—	72	70	65	74	96	85	86	86
	C341	—	—	77	88	102	—	92	107	146	85	123	92	105	105
B3439	D78	—	—	83	101	124	—	67	83	137	106	96	94	100	100
B38192	D89	—	107	109	111	106	—	112	128	117	98	119	100	103	103
	D95	—	—	83	92	115	—	92	103	102	100	103	95	107	107
	D104	—	—	72	98	126	—	79	98	118	94	104	80	100	100
B35207	E160	—	102	81	121	118	—	76	76	126	89	94	82	102	102
POJ2878	E163	—	—	—	—	—	—	—	—	—	—	—	—	87	81
	E165	—	—	55	89	117	—	75	95	136	107	102	88	99	99
	E166	—	—	50	111	117	—	80	86	103	90	95	85	90	90
	E162	—	—	83	121	127	—	93	114	118	105	102	103	119	119
	E168	—	94	46	71	119	—	58	94	103	75	92	79	83	83
	E174	—	96	65	90	122	—	74	71	128	91	83	73	86	86
	E175	—	—	70	104	131	—	70	104	100	83	89	100	103	103
	E178	—	—	73	94	131	—	95	112	109	76	88	91	101	101
	E181	—	—	55	102	124	—	44	60	105	67	98	85	84	84
	E183	—	—	82	110	99	—	80	89	121	99	92	93	93	93
	E196	—	—	50	75	120	—	76	63	106	69	90	77	86	86
B4382	F364	—	—	62	99	107	—	85	103	148	86	107	88	111	111
B34104	F376	—	—	93	80	102	—	98	77	136	108	93	96	94	94
	F388	—	—	72	94	60	—	83	96	128	99	115	88	93	93
	F403	—	106	68	127	119	—	76	111	103	103	104	95	105	105
	F405	—	—	89	129	103	—	98	105	124	93	96	93	85	85
	F407	—	—	74	103	97	—	82	69	93	91	94	86	90	90
B45170	G482	—	95	88	118	115	—	104	111	93	85	94	97	107	107
B41227	G483	—	89	73	112	107	—	79	94	97	90	77	83	103	103
	G489	—	—	87	71	92	—	77	83	115	104	108	86	87	87
	G491	—	—	85	81	130	—	89	86	146	110	96	97	105	105
B35206	H442	—	—	98	111	120	—	89	99	130	93	104	95	106	106
POJ2878	H444	—	117	90	105	128	—	94	97	125	111	122	103	111	111
	H445	—	—	75	110	118	—	86	90	147	85	117	89	104	104
	H454	—	—	88	65	128	—	86	93	111	98	111	94	93	93
	H457	—	—	33	105	122	—	50	80	93	91	89	78	89	89
	H459	—	—	87	78	98	—	76	83	103	94	97	86	93	93
	H463	—	—	68	90	120	—	58	89	114	85	104	89	95	95
Co421	I213	—	—	79	87	130	—	68	91	131	87	82	81	84	84
B37193	I216	—	—	93	63	95	—	58	105	106	75	102	84	105	105
B3439	J276	—	—	96	99	90	—	96	103	133	65	94	84	93	93
Co419	J284	—	—	85	87	104	—	78	102	136	86	95	85	107	107
	J285	—	—	55	90	131	—	73	96	128	106	98	88	93	93
	B37161	—	—	95	98	104	—	100	108	79	109	107	100	106	106
	B41227	—	—	61	81	119	—	101	110	129	82	82	91	109	109
	B42231	—	—	92	105	118	—	109	112	91	109	107	101	114	114
	B4362	—	—	122	113	111	—	107	122	126	120	128	108	119	119
	B4747	—	—	—	—	—	—	—	—	—	—	—	74	—	—
	B47258	—	—	93	66	106	—	117	121	116	91	104	97	117	117
	B47306	—	103	99	98	130	—	58	108	119	98	100	93	102	102
	B47310	—	—	87	107	125	—	102	95	118	90	95	92	105	105
	B47312	—	—	69	82	120	—	96	98	134	83	94	81	97	97
	B47320	—	—	71	116	123	—	108	83	164	85	106	83	106	106
	B47361	—	—	68	91	125	—	85	102	79	94	95	86	93	93
	B47419	—	—	77	113	128	—	86	75	85	93	99	93	92	92
S.E. % g.m.		—	—	—	—	—	—	24.1	14.5	—	—	19.1	19.2	—	—
Sig. Diff. ...		—	—	—	—	—	—	31.0	—	—	—	30.0	—	—	—

Not reaped as plants

VARIETY LATTICE EXPERIMENTS. SUGAR. 1953 AND 1954 RESULTS

Note.—Actual yields in tons sugar/acre are quoted for the standard variety, with other varieties expressed as a percentage of the standard.

Parentage	Variety	(1)		(2)		(3)		(4)		(5)		(6)		(7)	
		Plants	1st ratoons	Plants	1st ratoons	Plants	1st ratoons	Plants	1st ratoons	Plants	1st ratoons	Plants	1st ratoons	Plants	1st ratoons
B4145 x B42231	Standard	3.5	(2.5)	8.9	—	4.4	—	—	—	6.8	(3.5)	3.5	(3.5)	—	—
	A4	29	34	64	—	56	—	—	—	62	79	96	101	—	—
	A5	40	140	106	—	51	—	—	—	81	91	66	121	—	—
	A14	78	114	75	—	63	—	—	—	78	91	62	96	—	—
	A17	—	—	81	—	69	—	—	—	40	57	75	111	—	—
	A26	149	228	87	—	103	—	—	—	88	128	93	101	—	—
	A29	74	148	98	—	99	—	—	—	62	90	86	116	—	—
	A31	32	0	139	—	89	—	—	—	120	118	76	97	—	—
	A32	65	123	140	—	56	—	—	—	82	117	70	76	—	—
	A34	110	137	121	—	96	—	—	—	78	63	—	104	—	—
	A40	92	203	98	—	44	—	—	—	68	63	74	116	—	—
	B226	142	239	108	—	107	—	—	—	52	58	77	116	—	—
	B264	91	179	91	—	82	—	—	—	75	65	114	70	—	—
	B266	111	193	112	—	107	—	—	—	84	51	120	91	—	—
B3357 x	B267	57	164	124	—	111	—	—	—	75	57	125	101	—	—
	B270	77	167	88	—	133	—	—	—	73	101	117	105	—	—
	C295	105	134	55	—	71	—	—	—	75	112	104	97	—	—
	C296	32	104	95	—	126	—	—	—	68	79	118	114	—	—
	C299	97	138	90	—	106	—	—	—	68	87	86	73	—	—
	C800	59	164	74	—	70	—	—	—	48	39	—	73	—	—
	C309	110	189	128	—	75	—	—	—	93	79	89	99	—	—
	C311	79	66	42	—	78	—	—	—	66	90	125	86	—	—
	C316	21	0	41	—	59	—	—	—	65	68	79	120	—	—
	C322	64	15	120	—	86	—	—	—	80	121	75	116	—	—
	C324	32	13	122	—	79	—	—	—	76	182	71	151	—	—
	C325	98	140	75	—	75	—	—	—	79	63	98	116	—	—
	C326	75	50	134	—	50	—	—	—	77	85	90	63	—	—
	C327	17	68	123	—	78	—	—	—	61	96	77	96	—	—
B3439 x B38102	C329	95	28	121	—	92	—	—	—	72	92	43	87	—	—
	C830	117	195	100	—	122	—	—	—	80	101	98	126	—	—
	C836	15	6	115	—	98	—	—	—	74	81	68	85	—	—
	C340	67	120	106	—	85	—	—	—	84	80	93	101	—	—
	C341	21	40	93	—	77	—	—	—	72	35	68	128	—	—
	D78	75	116	91	—	84	—	—	—	80	79	80	116	—	—
	D89	113	207	101	—	88	—	—	—	59	30	97	95	—	—
	D95	42	0	76	—	62	—	—	—	102	126	48	157	—	—
	D104	69	78	70	—	60	—	—	—	62	86	80	78	—	—
	E150	101	132	127	—	107	—	—	—	90	122	141	134	—	—
	E153	104	132	—	—	—	—	—	—	—	—	—	—	—	—
	E155	95	216	—	—	118	—	—	—	52	57	100	122	—	—
	E160	113	150	73	—	119	—	—	—	48	58	135	91	—	—
	E162	171	330	147	—	109	—	—	—	113	121	113	130	—	—
B35907 x POJ3878	E168	100	128	151	—	115	—	—	—	83	38	101	104	—	—
	E174	107	156	93	—	89	—	—	—	75	102	111	106	—	—
	E175	71	160	113	—	76	—	—	—	61	116	89	101	—	—
	E178	20	107	139	—	103	—	—	—	82	92	138	144	—	—
	E181	39	39	106	—	65	—	—	—	71	57	87	84	—	—
	E183	85	112	116	—	61	—	—	—	82	63	85	87	—	—
	E196	44	118	102	—	45	—	—	—	61	81	80	87	—	—
	F364	84	167	72	—	38	—	—	—	86	91	93	130	—	—
	F370	118	170	34	—	70	—	—	—	80	62	69	109	—	—
	F388	41	88	54	—	99	—	—	—	50	39	70	65	—	—
	F403	32	8	116	—	84	—	—	—	87	88	104	117	—	—
	F405	68	182	188	—	85	—	—	—	75	24	112	120	—	—
	F407	95	156	84	—	73	—	—	—	90	71	76	108	—	—
	G342	65	40	106	—	106	—	—	—	84	117	94	78	—	—
B4362 x B34104	G483	142	208	176	—	94	—	—	—	93	145	100	137	—	—
	G489	53	0	55	—	64	—	—	—	68	54	107	116	—	—
	G491	68	0	135	—	91	—	—	—	82	141	82	117	—	—
	H442	77	42	57	—	99	—	—	—	75	77	109	103	—	—
	H444	69	26	125	—	52	—	—	—	107	106	122	136	—	—
	H445	22	11	63	—	99	—	—	—	68	64	90	102	—	—
	H454	37	112	43	—	84	—	—	—	81	76	70	105	—	—
	H457	67	63	100	—	51	—	—	—	37	57	96	104	—	—
	H469	66	30	91	—	85	—	—	—	85	43	81	114	—	—
	H463	61	140	38	—	117	—	—	—	82	85	112	153	—	—
	I313	75	212	104	—	110	—	—	—	84	85	119	97	—	—
	I216	89	205	87	—	46	—	—	—	101	134	76	117	—	—
	J276	11	39	92	—	28	—	—	—	90	77	128	137	—	—
	J284	91	175	116	—	97	—	—	—	98	129	84	143	—	—
Co421 x B37193 B3439 x Co419	J285	77	125	65	—	127	—	—	—	53	28	139	134	—	—
	B37181	122	235	144	—	113	—	—	—	111	145	109	100	—	—
	B41227	114	261	45	—	70	—	—	—	103	130	165	201	—	—
	B42231	138	186	154	—	138	—	—	—	88	132	131	150	—	—
	B4302	89	114	140	—	157	—	—	—	109	121	103	130	—	—
	B4747	—	—	—	—	79	—	—	—	—	—	—	—	—	—
	B47258	108	191	147	—	96	—	—	—	105	181	95	125	—	—
	B47306	118	251	93	—	62	—	—	—	79	86	124	150	—	—
	B47310	110	16	108	—	92	—	—	—	103	117	102	174	—	—
	B47312	73	246	82	—	68	—	—	—	82	80	94	122	—	—
	B47320	116	258	138	—	99	—	—	—	100	67	121	113	—	—
	B47331	59	106	106	—	—	—	—	—	65	97	146	165	—	—
	B47410	21	38	91	—	135	—	—	—	122	72	138	147	—	—
S.E. % g.m.		24.2	—	—	—	31.2	—	—	—	—	—	—	—	—	—
Sig. Dif. . .		38.9	—	—	—	54.1	—	—	—	—	—	—	—	—	—

Parentage	Variety	(8)		(9)		(10)		(11)		(12)		(13)		Island average	
		Plants	1st ratoons	Plants	1st ratoons	Plants	1st ratoons	Plants	1st ratoons	Plants	1st ratoons	Plants	1st ratoons	Plants	1st ratoons
	Standard	—	4.6	6.2	(3.0)	2.0	—	5.5	(4.4)	—	7.2	5.5	(2.5)	4.6	3.9
B4145 x	A4	—	—	4	59	221	—	74	71	—	88	66	100	73	76
B42231	A5	—	—	35	68	252	—	56	77	—	111	30	123	80	104
	A14	—	—	40	68	120	—	41	45	—	139	57	85	70	85
	A17	—	—	115	119	227	—	70	61	—	40	58	126	92	86
	A26	—	78	67	110	276	—	119	99	—	99	111	199	121	130
	A29	—	—	47	69	182	—	70	80	—	82	70	128	87	102
	A31	—	—	71	104	163	—	110	97	—	58	82	104	98	96
	A32	—	—	50	103	158	—	86	83	—	140	78	147	87	113
	A34	—	—	58	62	161	—	67	79	—	97	71	124	95	102
	A49	—	—	36	85	158	—	64	71	—	109	67	133	77	111
B44341 x	B226	—	94	130	119	238	—	89	103	—	118	122	139	118	122
B3537	B264	—	—	51	81	220	—	70	68	—	—	86	100	98	94
	B266	—	103	50	60	250	—	88	85	—	113	57	101	109	100
	B267	—	72	64	64	228	—	75	63	—	126	97	159	106	101
	B270	—	—	51	0	220	—	91	66	—	57	42	160	99	109
B3439 x	C295	—	—	56	95	142	—	94	86	—	111	77	121	87	108
B42231	C296	—	—	55	92	340	—	105	91	—	44	113	160	116	98
	C299	—	—	18	33	181	—	71	65	—	59	104	143	81	95
	C300	—	—	30	86	191	—	42	72	—	89	90	72	83	83
	C309	—	82	49	50	82	—	118	118	—	103	92	182	93	107
	C311	—	—	28	67	315	—	78	40	—	116	57	128	97	83
	C316	—	—	66	0	183	—	88	41	—	68	75	110	75	65
	C322	—	—	97	101	289	—	116	84	—	154	70	136	111	104
	C324	—	—	64	114	198	—	62	58	—	57	62	196	85	110
	C325	—	—	39	58	136	—	76	58	—	81	62	99	82	99
	C326	—	—	79	90	235	—	51	86	—	114	115	132	106	88
	C327	—	—	81	109	285	—	86	84	—	69	105	104	104	82
	C329	—	—	78	96	220	—	95	75	—	105	112	130	103	88
	C330	—	93	118	115	240	—	125	112	—	88	157	177	129	126
	C336	—	67	38	66	235	—	69	37	—	38	40	98	84	60
	C340	—	76	46	100	183	—	60	55	—	43	71	150	88	91
	C341	—	—	38	69	161	—	93	79	—	8	100	149	80	75
B3439 x	D78	—	—	62	75	153	—	60	68	—	146	101	140	87	106
B35192	D89	—	87	62	68	229	—	84	87	—	100	64	181	101	104
	D95	—	—	59	80	132	—	118	92	—	7	110	179	83	107
	D104	—	—	42	88	234	—	64	66	—	74	63	103	83	82
B35207 x	E150	—	124	98	104	175	—	71	95	—	66	131	174	116	127
POJ2878	E153	—	—	—	—	—	—	—	—	—	—	—	—	104	132
	E155	—	—	44	96	226	—	91	89	—	117	89	175	101	125
	E160	—	—	62	143	194	—	95	101	—	101	114	161	106	119
	E162	—	—	64	130	241	—	107	166	—	147	132	296	133	189
	E168	—	—	84	59	110	—	81	123	—	117	101	206	114	114
	E174	—	85	74	109	282	—	86	55	—	86	118	144	115	105
	E175	—	—	50	96	166	—	80	87	—	89	69	144	86	113
	E178	—	—	70	126	213	—	112	135	—	92	99	196	108	127
	E181	—	—	55	90	214	—	47	38	—	81	94	190	86	83
	E183	—	—	71	131	151	—	104	62	—	79	85	139	93	96
	E196	—	—	25	62	215	—	75	75	—	131	83	162	85	102
B4362 x	F364	—	—	50	124	229	—	111	134	—	147	132	258	105	160
B34104	F376	—	—	68	58	198	—	104	82	—	127	104	136	94	124
	F388	—	119	62	68	110	—	70	74	—	108	86	193	71	88
	F403	—	110	77	104	295	—	75	98	—	50	119	202	110	97
	F405	—	—	57	116	192	—	111	107	—	125	117	156	106	119
	F407	—	—	69	87	250	—	105	53	—	90	75	110	102	96
B45170 x	G482	—	93	63	108	255	—	104	125	—	69	130	227	108	94
B41227	G483	—	107	73	90	225	—	107	100	—	105	121	229	126	140
	G489	—	80	60	81	335	—	71	103	—	58	114	204	103	99
	G491	—	78	48	99	336	—	94	109	—	7	114	208	116	108
B35206 x	H442	—	—	65	89	64	—	104	93	—	101	53	140	78	92
POJ2878	H444	—	130	106	141	244	—	127	187	—	78	112	267	118	131
	H445	—	—	61	111	205	—	87	61	—	53	76	167	86	80
	H454	—	—	52	68	249	—	81	113	—	42	113	206	91	102
	H457	—	—	22	89	222	—	68	78	—	50	100	142	85	83
	H459	—	115	112	115	204	—	80	106	—	109	111	171	102	100
	H463	—	—	55	83	116	—	60	74	—	89	65	161	78	112
Co421 x	I213	—	—	85	112	285	—	89	137	—	154	88	182	115	140
B37193	I216	—	109	83	115	268	—	70	146	—	159	102	214	102	137
B3439 x	J276	—	—	87	92	191	—	144	139	—	100	85	185	95	109
Co419	J284	—	99	74	106	202	—	106	121	—	152	97	176	107	138
	J285	—	—	10	81	252	—	87	110	—	178	133	174	101	118
	B37161	—	—	11	77	198	—	142	142	—	124	135	167	133	141
	B41227	—	—	81	115	277	—	143	172	—	168	125	215	125	180
	B42231	—	113	84	113	209	—	130	137	—	87	139	176	135	137
	B4362	—	157	140	130	283	—	153	166	—	86	185	296	152	153
	B4747	—	—	—	—	—	—	—	—	—	—	—	—	79	—
	B47258	—	117	47	78	184	—	138	176	—	49	92	183	112	138
	B47306	—	100	72	91	207	—	65	128	—	103	116	189	103	139
	B47310	—	—	46	101	227	—	120	125	—	151	139	205	116	127
	B47312	—	—	73	78	184	—	111	104	—	136	84	174	89	136
	B47320	—	—	89	124	151	—	77	125	—	142	115	124	112	136
	B47361	—	—	72	91	194	—	62	95	—	66	106	186	99	115
	B47419	—	—	26	80	274	—	101	90	—	53	120	189	114	96
S.E. % g.m.		—	—	—	—	—	—	13.7	19.5	—	—	26.9	21.4	—	—
Sig. Diff. ..		—	—	—	—	—	—	25.8	36.2	—	—	51.1	34.3	—	—

PART 4
VARIETY X SPACING EXPERIMENTS

1. Frome—Masemire—Charlottenburgh—Logwood Gutter (variety x spacing)

	CANE				SUCROSE				SUGAR			
	Setts per acre				Setts per acre				Setts per acre			
	5000	7000	9000	Mean	5000	7000	9000	Mean	5000	7000	9000	Mean
Spring Plants												
B41227 ..	52.7	100	101	52.7	13.2	101	97	13.3	7.0	98	103	7.0
B42231 ..	79	88	91	86	95	99	94	104	83	89	97	89
B4362 ..	93	84	83	89	91	89	91	110	102	94	92	95
Mean ..	47.8	100	101	—	13.8	101	98	—	6.6	99	102	—
S.E. % g.m. ..		7.9				4.8				10.1		
Sig. Diff. ..		Variety 7.2	Spacing —			Variety 4.6	Spacing —			Variety 9.6	Spacing —	

2. Frome—Shrewsbury—Shrewsbury—Meylersfield Piece

	CANE				SUCROSE				SUGAR			
	Setts per acre				Setts per acre				Setts per acre			
	5000	7000	9000	Mean	5000	7000	9000	Mean	5000	7000	9000	Mean
Spring Plants												
B41227 ..	64.3	97	107	65.1	7.7	94	79	8.4	5.3	97	126	5.7
B42231 ..	75	90	90	84	77	72	75	122	92	115	110	98
B4362 ..	73	79	79	76	83	94	88	103	82	78	84	76
Mean ..	53.2	107	111	—	8.9	100	93	—	4.9	106	117	—
S.E. % g.m. ..		8.7				11.6				10.9		
Sig. Diff. ..		Variety 7.6	Spacing 9.3			Variety 10.7	Spacing —			Variety 9.9	Spacing 11.7	

3. Monymusk—Bog—Triangle 1

	CANE				SUCROSE				SUGAR			
	Setts per acre				Setts per acre				Setts per acre			
	5000	8000	Long tops	Mean	5000	8000	Long tops	Mean	5000	8000	Long tops	Mean
Spring Plants												
B41227 ..	75.2	103	113	79.1	7.3	109	88	7.2	5.5	103	91	5.7
B42231 ..	78	88	85	80	101	104	102	103	73	86	79	83
B4362 ..	77	94	86	81	94	107	102	102	66	92	80	83
MY3 ..	82	96	82	82	—	—	—	—	—	—	—	—
Mean ..	63.3	113	109	—	7.2	109	99	—	4.6	122	109	—
S.E. % g.m. ..		12.3				14.2				19.7		
Sig. Diff. ..		Variety 10.3	Spacing —			Variety —	Spacing —			Variety —	Spacing —	
1st Ratons												
B41227 ..	46.5	106	111	49.0	8.0	109	95	8.1	3.7	116	105	3.9
B42231 ..	88	92	85	84	122	110	124	117	105	100	108	100
B4362 ..	91	86	71	78	105	117	108	109	95	100	76	85
MY3 ..	60	58	72	60	129	111	118	118	78	65	84	72
Mean ..	39.4	101	100	—	9.1	98	98	—	3.5	100	100	—

4. Vale Royal—Swanswick—Tobacco

	CANE			SUCROSE		SUGAR	
	Spacing						
Spring Plants	4'	3'	Mean				
B41227	32.9	108	34.1				
B4362	85	93	86	No juice figures		No juice figures	
Co331	112	119	111				
Mean	32.5	108	—				

PART 5
CULTIVATION EXPERIMENTS

1. Appleton—Raheen—Big Grass 5

Spring Plants				A	B	C	D	S.E. % g.m.	Sig. Diff.
Cane	..	..	..	100	114	101	71	3.1	6.0
Sucrose	..	..	..	100	104	103	104	4.1	8.1
Sugar	..	..	..	100	118	104	61	4.2	8.0
1st Ratoons									
Cane	..	..	..	100	104	103	92	8.7	—
				A = 24' beds with 5 rows 5' apart planted straight					
				B = 12' " " 2 " 6' " " staggered					
				C = 24' " " 4 " 6' " " staggered					
				D = 48' " " 8 " 6' " " straight					

2. Jamaica Sugar Estates—Golden Grove—Section 12

Spring Plants				A	B	C	D	S.E. % g.m.	Sig. Diff.
Cane	..	..	..	36.1	109	111	112	1.1	1.7
Sucrose	..	..	..	8.2	89	96	91	8.3	—
Sugar	..	..	..	3.0	98	106	102	9.7	—
				A = Control—1 bed with 12 rows 5' 6" apart					
				B = 6 (11') beds with 2 rows " "					
				C = 4 (16' 6") " 3 " " "					
				D = 3 (22') " 4 " " "					

3. Monymusk—Mumby—Section 36

Fall Plants				A	B	C	D	E	F	G	S.E. % g.m.	Sig. Diff.
Cane	..	..	..	40.3	102	106	101	93	110	100	15.7	—
Sucrose	..	..	..	9.7	105	103	103	99	97	96	7.9	—
Sugar	..	..	..	3.9	108	110	105	107	107	97	14.0	—
1st Ratoons												
Cane	..	..	..	42.2	103	90	97	93	88	91	14.5	—
Sucrose	..	..	..	7.8	95	99	95	97	94	104	10.1	—
Sugar	..	..	..	3.3	98	92	92	106	83	95	19.9	—
2nd Ratoons												
Cane	..	..	..	32.4	110	106	121	126	104	112	14.7	—
Sucrose	..	..	..	8.9	98	95	97	99	95	100	6.3	—
Sugar	..	..	..	2.9	108	104	118	125	99	112	18.6	—
				A = Short cane planted straight 5,000 per acre								
				B = " " " staggered 5,000 per acre								
				C = " " " straight 8,000 per acre								
				D = " " " staggered 8,000 per acre								
				E = " " " straight 11,000 per acre								
				F = " " " staggered 11,000 per acre								
				G = Long cane planted straight								

APPENDIX III PART I FACTORY DATA COMPARED BY CROPS

TABLE I
JUICE QUALITY. CROPS 1950-54

	1950	1951	1952	1953	1954
Cane Pol %	12.65	12.72	12.41	12.18	11.94
Absolute Juice—Brix	17.69	17.99	17.70	17.29	17.02
Purity	83.43	82.91	81.93	81.79	81.61

TABLE II
MILLING FIGURES. CROPS 1950-54

	1950	1951	1952	1953	1954
Tons cane per hour (TCH)	42.62	45.12	48.44	52.75	56.23
Tons fibre per hour (TFH)	6.11	6.65	6.99	7.55	7.89
Imbibition % Fibre	127.03	133.87	147.07	134.05	139.59
Reduced Pol Extraction	95.06	95.22	95.29	95.24	94.88
Absolute Juice lost % Fibre (pol basis)	34.55	33.49	32.94	33.35	35.86
Pol % Bagasse	2.59	2.51	2.40	2.38	2.33

TABLE III
LIME CONSUMPTION IN JAMAICAN FACTORIES. CROPS 1950-54

Factory	Lbs. CaO/Ton Cane					Lbs. CaO/Ton Non-pol				
	1950	1951	1952	1953	1954	1950	1951	1952	1953	1954
† Monymusk	8.06*	7.86*	6.17	4.22	2.95	307.21*	301.59*	223.77	148.86	104.22
Richmond/Llandovery	1.04	—	1.16	1.22	1.49	43.96	—	46.37	46.85	60.56
Jamaica Sugar Estates	1.60	1.26	1.20	1.41	1.18	75.99	59.24	50.29	57.72	50.13
Frome	1.15	1.16	1.16	0.95	1.04	52.76	46.88	37.13	38.32	41.23
New Yarmouth	1.10	1.50	1.96	2.09	1.51	46.78	63.46	79.94	80.17	55.70
Caymanas	1.32	0.92	1.37	1.12	1.36	59.81	41.59	57.22	44.82	54.73
Innswood	0.88	1.03	1.39	1.17	0.98	36.82	42.71	55.60	44.08	38.20
Barnett	0.89	1.15	1.45	1.17	1.21	44.61	48.33	64.10	52.78	53.77
Worthy Park	1.06	—	0.88	1.10	1.46	64.16	—	47.59	59.04	79.33
Rose Hall	1.19	1.11	1.02	1.11	0.95	53.32	45.88	45.25	49.33	41.94
Green Park	—	—	1.21	1.08	—	—	—	55.25	42.62	—
Gray's Inn Central	1.20	1.31	1.07	1.17	1.62	49.52	51.22	42.60	46.32	62.11
Sevens	0.77	0.90	1.54	0.97	1.04	37.19	39.18	66.06	43.37	44.76
United Estates	1.37	1.51	1.12	1.40	1.28	58.14	62.39	48.71	62.57	56.17
Serge Island	—	1.59	1.42	1.35	1.28	—	60.77	57.53	51.41	54.65
Vale Royal	1.32	1.17	1.11	0.60	0.93	59.67	48.66	51.12	28.04	47.62
Appleton	1.55	1.06	0.76	0.95	0.97	97.94	—	35.65	47.31	43.22
Hampden	1.38	1.44	1.47	1.11	0.99	59.89	61.83	63.64	48.21	43.98
Bernard Lodge	0.93	1.76	1.51	1.53	1.55	39.37	76.25	64.64	63.61	69.67
Holland	—	—	—	1.21	1.25	—	—	—	49.06	49.13
Long Pond	1.26	0.91	1.01	1.91	1.34	60.85	41.91	55.47	86.20	65.47

* Includes Refinery Consumption.

† New Factory in 1949.

TABLE IV
HEATER CAPACITIES. JAMAICAN FACTORIES. CROPS 1950-54

Factory	Cu. ft. M.Jc./Sq. ft. H.S./Hr.				
	1950	1951	1952	1953	1954
Monymusk	0.91	0.92	0.92	0.94	0.97
Richmond/Llandovery	0.60	0.70	0.95	1.16	1.35
Jamaica Sugar Estates	1.04	1.09	1.11	1.14	1.15
Frome	1.10	1.07	1.09	1.07	1.00
New Yarmouth /	0.78	0.72	1.14	1.15	0.77
Caymanas	1.00	0.96	0.99	0.91	0.90
Innswood	0.87	0.97	1.02	1.03	1.11
Barnett	0.56	0.60	0.73	0.77	0.79
Worthy Park	1.81	0.84	0.86	1.01	1.07
Rose Hall	0.55	0.61	0.61	0.60	0.66
Green Park.. .. .	0.28	0.31	0.36	0.36	0.27
Gray's Inn Central	0.89	0.96	1.03	1.04	1.03
Sevens	0.79	0.59	0.72	0.82	0.98
United Estates	1.23	1.09	1.15	1.24	0.74
Serge Island	0.90	0.85	0.85	1.03	1.09
Vale Royal	0.85	0.94	0.95	0.99	1.03
Appleton	0.73	—	0.56	0.66	0.77
Hampden	0.66	0.66	—	0.65	0.73
Bernard Lodge	0.74	0.74	—	0.94	0.95
Holland	0.59	0.62	0.64	0.72	0.61
Long Pond	0.49	0.52	0.51	0.55	0.72

TABLE V
ROTARY FILTER PERFORMANCE, CROPS 1950-54

Factory	Sq. ft. FA/TCH					Pol in Cake % Pol in Cane				
	1950	1951	1952	1953	1954	1950	1951	1952	1953	1954
Monymusk	4.32	4.20	4.10	3.96	3.82	0.27	0.32	0.43	0.45	0.49
Frome	3.37	3.49	3.43	3.36	2.63	0.28	0.21	0.20	0.24	0.26
New Yarmouth	5.03	5.06	4.99	4.91	4.94	0.32	0.41	0.46	0.67	0.38
Caymanas	4.19	4.25	5.97	5.59	5.47	0.56	0.52	0.32	0.40	0.54
Innswood	5.70	4.94	4.79	4.53	3.98	0.48	0.22	0.27	0.26	0.24
Barnett	—	—	—	—	5.82	—	—	—	—	0.27
Gray's Inn Central	—	—	—	—	6.35	—	—	—	—	0.62
Sevens	—	—	—	—	3.45	—	—	—	—	0.27
United Estates	—	—	4.12	3.70	3.70	—	—	0.32	0.26	0.41
Vale Royal	—	—	—	—	7.70	—	—	—	—	0.62
Appleton.. .. .	—	6.03	6.00	5.04	4.31	—	—	0.56	0.48	0.23
Bernard Lodge	6.07	6.13	6.00	5.59	5.34	0.36	0.37	0.40	0.32	0.37

TABLE VI
FILTER STATION CONTROL FIGURES. CROPS 1950-54

	1950	1951	1952	1953	1954
Pol % Cake	2.56	2.58	2.33	2.40	2.02
Cake % Cane	2.10	2.17	2.28	2.29	2.29
Pol in Cake % Pol in Cane	0.43	0.44	0.43	0.45	0.39

TABLE VII
EVAPORATION RATES (AS LBS. EVAP./SQ. FT. H.S./HR.). CROPS 1950-54

Factory	°Brix Syrup					Lbs./Sq. ft. H.S./Hr.				
	1950	1951	1952	1953	1954	1950	1951	1952	1953	1954
Monymusk	57.17	58.00	58.85	58.67	54.67	8.29	8.33	9.80	8.67	8.67
Richmond/Llandovery ..	50.21	53.92	57.72	66.76	62.35	7.29	9.12	4.18	6.51	7.52
Jamaica Sugar Estates ..	55.45	61.65	59.04	57.81	57.56	5.94	6.41	7.27	6.54	6.62
Frome	47.57	45.25	51.33	48.99	57.97	9.88	9.35	10.81	9.83	7.98
New Yarmouth	55.10	62.66	62.96	63.60	66.11	7.44	7.00	6.50	7.57	7.68
Caymanas	60.17	56.39	58.54	57.77	54.75	7.18	6.76	6.58	4.77	4.63
Innswood	55.23	58.21	52.82	53.90	58.36	5.06	5.69	6.95	5.84	6.52
Barnett	59.50	56.18	62.15	58.51	57.53	6.00	5.34	7.61	7.08	7.35
Worthy Park	54.67	61.78	62.46	62.79	61.74	7.19	4.79	5.58	5.79	6.14
Rose Hall	63.26	65.00	65.39	60.96	59.99	6.04	6.89	7.73	6.66	8.02
Green Park	59.24	58.67	60.38	59.17	54.71	4.18	4.69	6.38	5.48	5.35
Gray's Inn Central ..	53.93	56.44	57.48	59.45	53.03	5.01	5.44	6.86	6.02	5.74
Sevens	52.42	63.46	61.33	61.64	64.32	6.64	4.63	6.35	6.38	6.75
United Estates	66.32	65.38	66.00	60.86	64.59	7.26	8.07	9.49	9.06	9.42
Serge Island	61.03	59.60	59.31	55.16	48.88	8.03	7.31	8.97	8.94	9.20
Vale Royal	57.37	56.82	59.08	58.36	60.64	7.07	7.84	9.20	8.34	8.89
Appleton	50.74	53.47	57.42	58.12	46.64	3.03	—	6.14	6.33	6.91
Hampden	55.07	50.38	61.54	57.70	59.40	4.92	3.77	5.25	6.04	7.18
Bernard Lodge	58.75	58.99	61.45	60.83	61.43	6.23	6.25	5.63	5.36	5.40
Holland	51.12	57.36	61.24	52.35	57.72	4.86	5.29	5.21	4.93	4.84
Long Pond	53.34	52.45	51.90	51.19	52.42	6.07	6.43	7.62	6.89	7.90

TABLE VIII

POLARIZATIONS, MOISTURES, SAFETY FACTORS AND PERMISSIBLE MOISTURES—EXPORT SUGAR. CROPS 1950-54

Factory	°Polarisation					% Moisture				
	1950	1951	1952	1953	1954	1950	1951	1952	1953	1954
Monymusk	96·27	95·87	95·75	96·01	96·59	0·93	0·95	0·94	1·10	1·14
Richmond/Llandovery ..	—	—	—	—	—	0·85	—	—	—	—
Jamaica Sugar Estates ..	97·08	—	—	—	—	0·99	—	—	—	—
Frome	95·93	96·07	96·10	95·96	96·23	1·08	1·07	1·08	1·07	1·07
New Yarmouth	97·24	97·49	97·44	97·42	97·32	0·68	0·67	0·59	0·61	—
Caymanas	97·45	97·49	97·22	97·50	97·57	0·66	0·67	—	—	—
Innswood	—	97·26	96·95	97·01	97·01	—	0·99	0·96	0·96	0·99
Barnett	96·52	96·46	97·61	96·62	97·48	1·03	0·96	0·97	0·99	1·00
Worthy Park	97·99	97·64	97·51	97·09	96·92	—	—	1·00	1·03	1·05
Rose Hall	—	—	—	96·72	97·28	—	—	—	0·86	0·83
Green Park	96·40	—	—	—	—	1·05	—	0·81	—	—
Gray's Inn Central	96·57	96·51	96·52	96·43	96·57	0·89	0·89	0·89	1·05	1·00
Sevens	96·10	96·50	96·61	96·45	96·54	—	—	—	—	0·73
United Estates	97·24	97·49	97·05	97·10	97·02	0·87	0·90	0·90	0·86	0·85
Serge Island	97·04	96·70	96·38	96·67	96·88	0·72	0·87	0·94	0·89	0·83
Vale Royal	—	—	—	—	—	0·78	—	0·68	0·72	—
Appleton	—	—	97·85	97·56	97·18	—	—	0·93	0·94	0·86
Hampden	97·07	—	97·17	97·42	97·96	0·86	—	0·87	0·88	0·87
Bernard Lodge	96·76	96·99	97·25	97·17	—	—	—	—	—	—
Holland	96·63	97·04	96·76	96·67	96·94	—	—	—	—	0·83
Long Pond	—	—	—	—	97·57	0·88	—	0·73	—	—

Factory	Safety Factor					Permissible % Moisture				
	1950	1951	1952	1953	1954	1950	1951	1952	1953	1954
Monymusk	0·249	0·230	0·221	0·276	0·334	0·93	1·03	1·06	1·00	0·85
Richmond/Llandovery ..	—	—	—	—	—	—	—	—	—	—
Jamaica Sugar Estates ..	0·339	—	—	—	—	0·73	—	—	—	—
Frome	0·265	0·272	0·277	0·265	0·284	1·02	0·98	0·98	1·01	0·94
New Yarmouth	0·246	0·267	0·230	0·170	—	0·69	0·63	0·64	0·65	0·67
Caymanas	0·259	0·267	—	—	—	0·64	0·63	0·70	0·63	0·61
Innswood	—	0·361	0·315	0·321	0·331	—	0·69	0·76	0·75	0·75
Barnett	0·296	0·271	0·406	0·293	0·397	0·87	0·89	0·60	0·85	0·63
Worthy Park	—	—	0·402	0·354	0·341	0·50	0·59	0·62	0·73	0·77
Rose Hall	—	—	—	0·262	0·305	—	—	—	0·82	0·68
Green Park	0·292	—	—	—	—	0·90	—	—	—	—
Gray's Inn Central	0·259	0·255	0·256	0·294	0·292	0·86	0·87	0·87	0·89	0·86
Sevens	—	—	—	—	0·211	0·98	0·88	0·85	0·89	0·87
United Estates	0·315	0·359	0·305	0·297	0·285	0·69	0·63	0·74	0·73	0·75
Serge Island	0·243	0·264	0·260	0·267	0·266	0·74	0·83	0·91	0·83	0·78
Vale Royal	—	—	—	—	—	—	—	—	—	—
Appleton	—	—	0·432	0·385	0·305	—	—	0·54	0·61	0·71
Hampden	0·294	—	0·307	0·341	0·426	0·73	—	0·71	0·65	0·51
Bernard Lodge	—	—	—	—	—	0·81	0·75	0·69	0·71	—
Holland	—	—	—	—	0·271	0·84	0·74	0·81	0·83	0·77
Long Pond	—	—	—	—	—	—	—	—	—	0·61

TABLE IX

PER CENT. GROSS GRINDING TIME. CROPS 1950-54

	1950	1951	1952	1953	1954
Non-Factory Stoppages	14·74	17·38	15·05	16·47	15·11
Factory Stoppages	9·27	9·37	7·80	7·85	7·72
Time Grinding	75·99	73·25	77·15	75·67	78·68

TABLE X

POL BALANCE (% POL IN CANE). CROPS 1950-54

	1950	1951	1952	1953	1954
Pol in Sugars	84·77	84·54	84·44	84·11	84·33
Pol in Bagasse	5·53	5·74	5·53	5·57	5·53
Pol in Molasses	7·13	7·38	7·89	8·33	8·23
Pol in Filter Cake	0·41	0·68	0·42	0·45	0·39
Pol in Undetermined	2·16	1·66	1·72	1·54	1·52

TABLE XI
COMPARATIVE CONTROL FIGURES. CROPS 1950-54

	1950	1951	1952	1953	1954
Pol % Cane	12.65	12.72	12.41	12.18	11.94
Mixed Juice—Purity	83.82	83.28	82.56	82.21	82.02
Tons Cane/Ton 96° Sugar	9.00	8.93	9.16	9.37	9.53
Boiling House Efficiency	96.95	97.49	97.62	97.51	97.85
Pol in Sugars % Pol in Cane	84.30	85.90	84.42	84.11	84.33
Pol in Molasses % Pol in Cane	7.48	7.77	7.63	8.20	8.23

TABLE XII
MOLASSES FACTORS. CROPS 1950-54

Factory	1950	1951	1952	1953	1954
Monymusk	47.69	42.79	45.06	46.72	44.62
Richmond/Llandovery	—	34.30	35.02	37.05	38.26
Jamaica Sugar Estates	37.61	39.67	40.40	42.33	38.91
Frome	32.85	32.04	33.57	35.32	33.98
New Yarmouth	37.96	39.93	39.26	38.34	38.10
Caymanas	36.58	36.86	36.98	39.72	39.65
Innswood	41.41	42.22	42.89	45.24	47.32
Barnett	45.94	43.53	39.73	42.73	42.62
Worthy Park	34.08	39.76	35.92	31.90	41.69
Rose Hall	47.70	44.02	44.57	48.13	52.45
Green Park	—	—	—	—	—
Gray's Inn Central	40.57	40.78	39.49	37.31	39.03
Sevens	—	41.48	39.50	41.37	39.86
United Estates	36.54	37.88	38.14	38.35	38.31
Serge Island	34.39	37.60	40.23	37.62	35.62
Vale Royal	35.74	29.61	34.78	35.25	39.72
Appleton	55.61	—	46.41	33.63	29.67
Hampden	—	—	—	38.12	42.87
Bernard Lodge	44.19	43.79	41.22	43.66	45.44
Holland	—	—	50.21	46.71	37.02
Long Pond	40.68	38.43	36.92	37.98	38.77

TABLE XIII
QUALITY OF CANE SUPPLIED TO JAMAICAN FACTORIES, EXPRESSED AS POSSIBLE TONS CANE/TON 96° SUGAR
(Calculated on a basis of assumed Mill Extraction of 96.50, a B.H.E. (Winter Crop) of 100 and Pol % Cane and Purity of Mixed Juice as reported.)
(Calculated on Copp's Tables—Spencer Meade, page 762.)

Factory	1950	1951	1952	1953	1954	5-year Averages
Monymusk	8.40	8.70	8.43	9.12	8.98	8.73
Richmond/Llandovery	—	—	9.25	8.36	8.98	8.86
Jamaica Sugar Estates	8.86	8.21	9.22	9.77	9.61	9.13
Frome	8.02	8.16	8.53	9.03	9.32	8.61
New Yarmouth	8.60	8.46	8.66	8.62	8.79	8.63
Caymanas	8.52	8.54	8.73	8.64	8.83	8.65
Innswood	8.25	8.29	9.03	8.80	9.09	8.69
Barnett	8.22	7.82	7.80	8.66	9.04	8.31
Worthy Park	7.63	7.75	7.27	7.27	7.42	7.47
Rose Hall	7.28	7.36	7.43	7.56	8.35	7.60
Green Park	8.49	8.50	7.95	8.73	9.77	8.69
Gray's Inn Central	10.45	9.44	10.76	9.84	10.18	10.13
Sevens	9.12	8.66	8.85	8.54	8.66	8.77
United Estates	8.13	7.78	7.93	8.44	8.76	8.21
Serge Island	7.50	7.63	7.79	8.20	8.51	7.93
Vale Royal	8.53	8.68	8.41	8.72	8.94	8.66
Appleton	8.36	8.24	7.52	7.98	8.90	8.20
Hampden	8.27	8.76	8.24	8.77	9.26	8.66
Bernard Lodge	8.46	8.64	8.83	8.69	8.59	8.64
Holland	8.47	8.18	8.90	8.85	9.97	8.87
Long Pond	8.82	8.68	8.09	9.07	9.49	8.83
Island Averages	8.42	8.40	8.65	8.83	9.02	8.66

FACTORY DATA 1954 CROP

TABLE I
FACTORY EQUIPMENT DATA

Factories	Width Carrier	Knives		Crusher and Mills	Total Rolls	Remarks
		Setts	Blades/Setts			
Monymusk ..	73"	2	38/38	3 RC 35½" × 78", 15 RM 35" × 78"	18	For 1954 crop: 2 crystallizers 685 cu. ft. capacity each, installed. Special saveall for evaporator 4th vessel. Special saveall for 1 vacuum pan. For 1955 crop: 1 additional tray for Dorr clarifier. 1 additional evaporator, 1st vessel, 6,250 sq. ft. H.S., to operate in parallel with existing 1st vessel for vapour heating. Special savealls for 5 vacuum pans.
Richmond/Llandovery ..	41"	1	22	6 RM 22" × 42", 12 RM 24" × 42"	18	For 1954 crop: 4 Pitcairn crystallizers converted into water cooled type.
Jamaica Sugar Estates ..	60	1	30	2-2 RC 30" × 60", 12 RM 30" × 60"	16	For 1955 crop: 1 1,240 sq. ft. H.S. Hamill pan, 34 tons striking capacity. 2 new calandrias, 5,600 sq. ft. H.S. each, for evaporator. 2 new centrifugals, 42" × 24", 750-1,500 r.p.m. 1 set heavy duty cane knives, 580 r.p.m., 80 blades. 1 bagasse bailing press. 1 pan-ohmer. 1 pH meter for clarification. Mechanical lubrication of all mills.
Frome ..	78"	2	38/38	3 RC 35½" × 78", 12 RM 35" × 78"	15	For 1955 crop: 1 additional boiler. 4 high speed centrifugals. 300 H.P. motor to replace 300 H.P. drive of 1st knife. 1 additional Oliver filter. Bulk sugar store.
New Yarmouth ..	52"	2	26/36	3 RC 26½" × 64", 12 RM 26" × 64"	15	For 1954 crop: Edward's hydraulic accumulators fitted to all five mills. Passenger lift to roof, cryst. and pan floors. Mill return maceration juice mixers before chokeless pumps. Washed sugar conveyor, elevator, and storage bin. For 1955 crop: 800 KW. Turbo-attenuator to replace two 300 K.W. sets.
Caymanas ..	48"	1	32	3 RC 24" × 48", 12 RM 24" × 48"	15	For 1955 crop: New W.T. B and W boiler of 4,020 sq. ft. heating surface being installed. Edward's hydraulic accumulators being installed. Farval mill lubrication system being installed.
Innswood ..	42"	1	24	3 RC 24" × 42", 12 RM 24" × 42"	15	For 1954 crop: 562 KVA. steam turbine generator. New S. and K. condenser for quad.
Barnett ..	40"	1	44	3 RC 23" × 36", 12 RM 23" × 36"	15	For 1954 crop: "Eimco" rotary filter. Juice scale with automatic liming device. 1 Vacuum pan (77). 1 Crystallizer, 360 sq. ft.
Worthy Park ..	42"	1	24	3 RC 22½" × 42", 3 RM 22½" × 42", 9 RM 24" × 42"	15	For 1954 crop: Maxwell Boulogne scale. Well for extra condenser water. A and C sugar crystallizers. Centrifugal engine (new). For 1955 crop: Thompson Eisner furnace for 3rd and 4th furnaces.
Rose Hall ..	38"	1	26	15 RM 24" × 42"	15	For 1954 crop: 2 Roller crusher removed and 2 additional mills (24" × 42") installed, making 6 3-roller units.
Green Park ..	37½"	1	24	3 RC 22" × 38", 12 RM 22" × 42"	15	Factory ceased grinding as from the 1954 crop.
Gray's Inn Central ..	60"	1	10	2 RC 26" × 60", 12 RM 30" × 60"	14	For 1954 crop: Maxwell Boulogne juice scale and Eimco filter.
Sevens ..	54"	1	26	12 RM 32" × 60"	12	For 1954 crop: Automatic juice scale. Bagging and weighing machine. Oliver rotary filter. Crystallizer, cooling element. For 1955 crop: Towed crane. Centre flow vac. pan, automatic boiler feed regulators. 200,000 gal. molasses storage tank. Automatic back pressure regulating valve.
United Estates ..	39"	1	24	3 RC 24" × 48", 9 RM 24" × 42"	12	For 1954 crop: 200,000 gal. molasses storage tank installed. Ronald Trist juice level controllers fitted to evaporator. Large juice heater of 888 sq. ft. H.S. and additional 1st vessel installed. 3 low grade crystallizers converted to Blanchard cooling system. 1 vacuum pan, 1000 sq. ft. H.S. and 1 pan-ohmer. 1 steam heating substation for Oliver filtrates. Sugar house extended and sugar bins installed.
Serge Island ..	48"	1	22	3 RC 26" × 48", 9 RM 24" × 48"	12	For 1954 crop: 2 20" × 42" centrifugals for "C" sugars. Steam turbine driven pump to operate high grade sugar centrifugals.
Vale Royal ..	42"	1	30	3 RC 25" × 42", 9 RM 24" × 42"	12	For 1955 crop: Steam turbine ordered for cane knife drive. Lea recorder to measure maceration water.
Appleton ..	42"	2	26/13	3 RC 25" × 42", 9 RM 25" × 42"	12	For 1955 crop: 1 New Fletchers centre flow calandria vac. pan, 9' 6" dia. 1 3,000 sq. ft. pre-evaporator to replace existing one. Five 30 × 18 centrifugals for curing "C" masecutite.
Hamnden ..	44"	1	20	12 RM 24" × 48"	12	No change for 1954 crop. For 1954 crop: New A and B centrifugals.
Bernard Lodge ..	87"	1	42	2 RC 34" × 87", 6 RM 37" × 84", 3 RM 38" × 84"	11	For 1955 crop: Binco 8' by 12' mud filter. New 7-5 ton crane. New road scale.
Holland ..	36"	1	18	2 RC 20" × 36", 9 RM 22" × 36"	11	For 1954 crop: 6 Water cooled crystallizers. 2 10 ft.-1,200 sq. ft. H.S. vacuum pans fitted with Hamill low head bodies and Smith centre feed stream flow bottom.
Long Pond ..	43"	1	33	9 RM 24½" × 48"	9	No change for 1954 crop. For 1954 crop: 1 1½' × 3 trays Bach continuous clarifier installed. 1 1½ tons M.B. juice scale installed. For 1955 crop: 2 vertical high velocity juice heaters each 600 sq. ft. H.S. Thompson Eisner furnace being erected on Nos. 1 and 2 boilers.

TABLE II
FACTORY STATIONS CAPACITIES—1954

	Mon- musk	Rich- mond/ Llan- dover	Jamaica Sugar Estate	Frome	New Yar- mouth	Cay- manas	Inn- wood	Bar- nett	Worthing Park	Rose Hall	Green Park	Gray's Central	Sevens	United Estate	Serge Island	Vale Royal	Apple- ton	Hamp- den	Ber- nard Lodge	Holland	Long Pond	Totals and Averages
Per Ton Cane/Hour																						
Boilers																						
As Water Tube	242	277	446	184	265	407	267	330	270	353	433	255	291	283	329	350	438	365	194	241	367	283
superheater	39	—	69	30	36	—	—	31	—	—	—	14	—	—	—	—	42	—	3	—	—	33
sq. ft. H.S.	31	24	26	33	39	35	27	39	30	64	80	28	32	42	29	31	42	39	32	48	48	35
Juice Heaters																						
sq. ft. F.A.	—	43	42	—	—	—	—	—	32	61	25	—	30	8	19	67	—	7	—	49	60	33
sq. ft. F.A.	3-82	—	—	2-63	4-94	5-47	3-98	5-83	—	—	—	6-35	3-45	3-70	—	7-70	4-31	—	5-34	—	—	4-23
Filters																						
Presses	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Rotary	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
First Subsiders																						
Continuous	46	80	79	80	104	102	64	116	67	88	—	71	56	71	44	96	85	85	89	—	99	76
Intermittent	—	—	—	—	—	—	—	—	—	—	—	—	—	—	26	—	—	—	—	132	59	59
Second Subsiders																						
Intermittent	—	—	—	—	—	—	—	—	—	—	39	—	—	18	—	—	—	17	—	26	18	21
Evaporators																						
Ci. Juice Heaters	11	—	—	—	10	—	—	14	—	—	—	—	—	—	—	17	—	—	—	—	24	12
As Quad	160	217	223	203	197	329	213	206	260*	199	252	242	235	169	163	178	212	202	280	300	179	213
Evaporators																						
As Quad	1,630	2,044	2,263	1,857	1,875	3,088	2,168	2,031	2,064	1,807	2,869	2,601	2,184	1,572	1,504	1,716	2,064	2,076	2,679	3,205	1,833	2,051
Vacuum Pans																						
As Calandria	513	—	469	407	500	513	444	430	286	—	616	700	355	430	471	345	618	525	593	—	607	481
sq. ft. H.S.	366	350	332	281	350	313	375	406	243	337	410	449	264	261	417	256	436	248	383	401	439	337
Syrup Tanks																						
cu. ft.	190	167	254	140	225	267	—	177	97	138	214	294	131	178	298	178	167	160	408	314	218	206
A and B Molasses																						
cu. ft.	506	377	609	265	316	267	—	429	402	413	783	714	299	358	541	617	502	346	612	833	433	435
Crystallizers																						
Natural Cooling	—	—	584	—	263	—	1,365	153	—	469	1,467	449	—	183	504	—	667	357	765	674	—	561
Air Cooled (Pitcairn)	619	619	974	308	478	534	—	1,379	670	546	—	1,061	666	550	419	1,572	725	449	—	713	1,555	1,049
Water Cooled	179	197	148	115	63	—	—	1,635	—	243	—	311	—	268	126	—	—	67	—	—	—	206
sq. ft. C.A.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Pug Mill L.G.																						
Sugars	574	75	130	—	550	—	26	80	—	—	—	84	67	58	90	—	—	—	—	—	320	2,054
Water Heated	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	109
Vapour Heated	—	—	95	—	—	—	—	—	55	—	—	—	—	—	—	—	—	—	—	—	—	—
Centrifugals																						
No. Off.	8	6	6	11	4	8	6	6	5	4	4	6	8	6	6	8	5	3	8	3	3	122
Size: Height	20	18	20	20	24	18	18	18	18	18	14	18	18	18	20	18	24	24	24	18	24	19
Ins.	20	30	40	40	40	30	30	30	30	30	30	36	36	36	42	30	40	40	40	30	40	36
Operating Speed	1,200	1,200	1,000	1,000	50/850/1,750	1,800	1,400	1,100	1,200	1,100	1,200	1,200	1,200	1,200	1,000	1,200	1,000	1,200	1,100	1,200	1,200	1,116
Gravity Factor	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Low grade Sugars																						
No. Off.	12	6	6	13	4	4	5	6	2-1	5	5	7	6	4	5	—	3	6	6	2	2	106
Size: Diameter	20	18	20	20	24	18	18	18	18-18	18	14	18	18	18	20	—	18	18	24	18	24	19
Ins.	42	30	42	42	40	42	30	30	30-36	30	30	36	36	36	42	30	40	40	40	30	40	36
Operating Speed	1,200	1,200	1,000	1,000	1,650	1,800	1,400	1,100	1,200	1,200	1,200	1,140	1,200	1,100	1,000	1,200	1,000	1,200	1,100	1,200	1,200	1,204
Gravity Factor	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Refinery																						
No. Off.	4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4
Size: Height	20	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	20
Ins.	42	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	42
Operating Speed	1,200	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1,200
Gravity Factor	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	825

* Quintuple.

TABLE III
FACTORY QUANTITIES

	Mony- musk	Rich- mond/ Llan- dover	Jamaica Sugar Estates	Frome	New Yar- mouth	Cay- manas	Inns- wood	Bar- nett	Worthy Park	Rose Hall	Green Park	Gray's Inn Central	Sevens	United Estates	Serge Island	Vale Royal	Apple- ton	Hamp- den	Ber- nard Lodge	Hol- land	Long Fond	Totals and Averages
Tons Cane:																						
Estate Ground ..	506,520	53,705	113,001	361,689	135,930	123,807	72,091	29,632	47,860	30,246	1,725	64,452	73,958	65,348	42,288	52,022	70,108	56,176	151,735	34,157	39,301	2,123,692
Purchased Ground ..	120,400	6,330	74,124	334,509	78,158	12,628	62,646	57,786	39,501	24,699	11,710	84,605	106,302	73,855	69,176	30,061	32,629	83,454	48,157	8,776	24,590	1,380,096
Total Ground ..	626,920	60,035	187,125	696,198	212,088	136,435	134,737	87,308	87,361	54,945	13,435	149,057	180,260	139,203	107,465	82,083	102,737	139,630	199,942	42,933	63,891	3,503,788
Total for Sugar Manuf. ..	626,300	60,035	187,125	696,182	212,088	136,435	134,689	87,307	87,361	54,944	13,390	149,057	180,260	139,203	107,465	82,013	101,428	138,173	199,935	42,933	60,548	3,496,871
Bagasse:																						
Estimated Surplus Tons	6,000	—	500	30,000	80	—	3,900	—	—	—	—	5,000	—	7,000	—	None	None	—	—	None	—	52,480
Fuel:																						
Wood used—Factory "	70	—	—	150	—	—	317	2,336	—	1,250	—	—	—	480	50	584	1,593	7,411	—	1,213	4,060	19,519
Distillery "	—	—	—	—	—	—	51	—	—	—	—	—	—	—	50	83	—	—	—	—	184	
Locomotives, "	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	207	—	—	—	207	
Factory Wood/Ton 96° Sugar "	—	—	—	—	—	—	0.02	0.26	—	0.20	—	—	—	0.03	—	0.07	0.15	0.54	—	0.30	—	0.07
Filter Cake "	21,386	922	2,702	16,892	5,165	3,905	2,017	1,518	1,302	594	123	4,587	2,093	3,482	1,235	1,889	1,641	1,974	5,328	478	706	80,059
Gals. Molasses:																						
Equivalent 88° Brix ..	3,968,088	308,538	957,300	3,491,064	1,170,119	688,779	750,582	440,603	322,614	307,231	—	851,897	908,815	673,390	518,717	367,369	623,120	794,880	918,905	229,059	275,153	18,466,313
Sugar Made:																						
A Grade .. Tons	—	—	—	—	—	—	—	—	—	—	—	—	—	250.00	—	—	—	—	—	—	—	250.00
C Grade .. "	—	—	—	—	3013.20	—	—	800.00	1695.00	—	—	480.00	—	2958.20	—	—	—	—	—	—	—	8946.40
D Grade .. "	220.00	1475.00	—	3060.90	3053.00	3369.00	2240.00	1125.00	1000.00	—	—	2500.00	2,419	2526.60	1235.00	275.00	2550.00	390.00	2480.10	1150.00	235.00	31303.60
Refined .. "	4500.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4500.00
Total Local Consumptn.,	4720.00	1475.00	—	3060.90	3053.00	6382.20	2240.00	1925.00	2695.00	—	—	2380.00	2,419	5734.80	1235.00	275.00	2550.00	390.00	2480.10	1150.00	235.00	45000.00
Substitution .. "	3392.00	—	2287.00	5901.10	—	—	—	—	—	742.00	145.00	—	—	—	211.00	777.00	—	1291.00	110.90	—	477.00	15334.00
Export .. "	57382.70	4911.50	16177.20	63394.40	19282.40	8163.80	11355.50	6993.00	8281.70	5248.80	1028.80	10866.00	16,971	9228.00	10224.50	7441.10	8002.00	11886.40	18328.00	2865.00	5037.90	302869.90
Official Crop Production,,	65494.70	6386.50	18464.20	72356.40	22335.40	14546.00	13595.50	8818.00	10976.7	5990.80	1173.80	13846.00	19,390	14962.80	11670.50	8493.10	10552.00	13567.40	20919.00	4015.20	5749.90	363303.90
Lime Burnt .. Lbs.	1,846,790	893,760	220,819	724,640	320,664	184,936	132,474	105,336	127,418	52,295	—	241,427	187,456	178,640	137,525	76,281	98,381	135,674	309,054	53,760	81,360	6,108,690
Phosphate for Clari- fication .. "	—	504	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	504
Superphosphate .. "	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Tri-Sodium Phosphate Lbs.	16,800	—	—	—	—	365	2,362	—	—	—	—	596	—	—	—	—	—	—	—	—	—	20,123

Tons wood burnt: Frome 894, for Lime Kiln.

TABLE IV

FACTORY ANALYTICAL DATA

	Mony- musk	Rich- mond/ Llan- dover	Jamaica Sugar Estates	Frome	New Var- mouth	Cay- manas	Inns- wood	Bar- nett	Worthy Park	Rose Hall	Green Park	Gray's Inn Central	Sevens	United Estates	Serge- Island	Vale Royal	Apple- ton	Hamp- den	Ber- nard Lodge	Hol- land	Long Pond	Island Averages
Cane																						
Pol %	12.13	11.97	11.22	11.60	12.33	12.16	11.90	11.83	14.01	12.72	11.05	10.76	12.84	12.18	12.54	11.82	11.98	11.58	12.39	10.95	11.25	11.94
Fibre %	13.93	13.49	15.05	13.05	15.25	13.41	16.26	14.61	11.62	15.16	17.01	15.17	14.05	14.20	13.97	14.17	13.09	13.82	15.62	13.32	13.36	14.04
Bugasse																						
Pol %	1.90	1.98	2.15	2.23	2.44	2.01	2.40	2.67	2.88	2.36	2.73	2.10	2.75	2.48	2.67	2.64	2.23	2.71	2.76	2.84	3.46	2.33
Moisture % ..	50.27	45.23	43.14	47.89	47.31	46.24	44.87	45.69	46.52	45.02	46.66	44.75	43.40	45.64	46.67	44.37	44.30	47.51	49.09	45.16	46.98	47.30
Juices																						
First Exp. °Brix	19.34	18.04	16.94	17.23	18.71	18.40	18.34	18.00	18.80	19.12	17.76	17.49	18.45	18.13	18.55	17.41	18.39	17.73	18.59	16.92	16.97	17.97
Pol %	15.03	15.20	14.23	14.25	15.53	15.48	15.33	15.33	16.86	16.46	14.94	14.24	15.68	15.39	15.94	15.13	15.75	15.05	15.96	14.00	14.40	15.06
App. Purity ..	81.95	84.27	84.00	82.70	83.00	84.12	83.59	85.17	89.68	86.09	84.12	81.42	85.00	84.89	85.93	86.90	85.65	84.88	85.85	82.74	84.86	83.80
Absolute °Brix	17.61	16.90	16.26	16.50	18.05	17.10	17.55	16.71	18.10	17.93	16.41	16.05	17.34	17.10	17.51	16.95	16.56	16.36	17.60	15.83	15.65	17.02
App. Purity ..	80.00	81.86	81.20	80.85	80.55	82.15	80.90	82.82	87.87	83.66	81.17	79.05	82.81	83.04	83.27	84.72	83.23	82.09	83.43	79.79	83.00	81.61
Mixed °Brix	16.31	14.60	14.68	14.12	15.99	15.05	15.78	14.68	15.84	15.08	14.96	14.83	14.99	14.90	14.72	14.19	14.31	15.35	15.23	14.67	13.72	15.07
App. Purity ..	80.35	82.33	81.88	81.37	81.02	82.46	81.31	83.11	87.88	84.17	81.68	79.66	83.25	83.42	83.42	85.07	83.58	82.61	83.80	80.03	83.83	82.02
R.S. Ratio ..	7.37	8.26	9.88	9.83	7.80	6.80	8.63	7.30	—	5.63	—	8.92	8.33	8.13	7.17	8.29	7.83	—	5.89	—	9.19	8.20
Last Exp. °Brix	3.17	2.74	3.77	3.86	3.76	4.41	4.53	5.43	3.65	2.83	5.43	6.54	4.08	4.89	6.58	6.16	2.93	6.56	6.37	7.36	5.68	—
App. Purity ..	72.80	72.56	71.09	73.06	74.17	76.02	75.28	73.65	81.09	74.91	76.25	71.44	77.27	77.50	78.42	79.36	76.28	75.43	78.95	76.42	76.53	—
Subsidiary																						
App. Purity ..	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	80.94	—	—
Evap. Supply																						
°Brix	15.68	14.99	14.37	14.16	15.43	14.71	15.49	14.80	15.83	14.83	15.01	14.50	15.16	15.90	14.16	14.19	14.69	15.87	15.34	14.71	13.75	—
App. Purity ..	81.48	82.92	82.60	81.71	82.63	82.45	81.48	83.70	88.55	84.54	82.55	80.06	84.01	83.91	84.60	86.75	84.31	82.69	85.14	80.39	84.00	—
Syrup °Brix	54.67	62.35	57.56	57.97	66.11	64.75	68.36	57.53	61.74	59.99	54.71	53.03	64.32	64.69	48.88	60.64	46.64	59.40	61.43	57.72	52.42	—
App. Purity ..	80.20	83.47	83.48	82.49	82.32	82.68	82.98	84.25	86.74	85.01	83.10	81.11	84.70	84.45	84.92	86.67	84.81	83.22	85.77	80.73	83.55	—
Filter Cake Pol %	1.76	4.61	3.79	1.23	1.90	2.28	1.92	1.83	3.33	3.42	6.01	2.17	2.90	2.01	3.02	3.03	1.73	2.91	1.73	5.33	4.83	2.02
Moisture % ..	75.61	75.43	—	78.39	77.26	76.36	71.65	75.74	66.19	58.43	—	54.39	—	77.07	—	74.75	77.68	—	73.97	59.61	—	74.47
Sugars																						
(All) °Pol ..	96.83	96.47	97.39	96.22	97.33	97.55	97.02	97.64	97.13	97.28	96.96	96.45	96.61	97.32	96.82	97.06	96.87	97.94	97.30	96.83	97.57	96.91
(Export) °Pol	96.59	—	—	96.23	97.32	97.57	97.01	97.48	96.52	97.28	—	96.87	96.54	97.02	96.88	—	—	97.96	—	96.94	97.57	—
(All) °Moisture ..	1.06	0.93	0.95	1.07	—	—	0.99	1.00	—	—	0.77	1.00	0.74	—	0.85	0.61	0.88	0.87	—	0.85	0.61	—
(Export) °Moisture	1.14	—	—	1.07	—	—	0.99	1.00	1.05	0.83	—	1.00	0.73	0.85	0.83	—	0.86	0.87	—	0.83	—	—
Final Molasses																						
°Brix	93.47	86.32	87.62	91.02	91.32	89.52	87.02	86.53	90.38	87.89	84.12	89.20	88.94	88.33	86.58	84.48	84.32	86.69	91.77	86.11	86.65	89.89
App. Purity ..	34.42	31.82	31.04	29.66	32.52	33.60	34.91	32.61	35.10	37.07	31.92	30.55	31.74	31.34	30.48	31.61	31.69	29.39	38.09	30.96	30.44	32.40

TABLE V
FACTORY CONTROL DATA

Control Classification	Rich- mond/ Llan- dover	Jamaica Sugar Estate	Frome	New Yar- mouth	Cay- manas	Inns- wood	Bar- nett	Worthy Park	Rose Hall	Green Park	Gray's inn Central	Sevens	United Estate	Serge Island	Vale Royal	Apple- ton	Hamp- den	Ber- nard Lodge	Hol- land	Long Pond	Island Average
Cane																					
Fibre/Pol Ratio ..	1-15	1-13	1-34	1-13	1-10	1-28	1-23	0-83	1-19	1-54	1-41	1-14	1-17	1-11	1-20	1-09	1-19	1-26	1-22	1-19	1-18
Tons Cane/Ton 98° Sugar ..	9-48	9-35	9-99	9-60	9-37	9-78	9-71	7-86	8-99	11-29	10-71	9-25	9-19	9-13	9-55	9-53	9-98	9-43	10-60	10-36	9-53
Demarara Index ..	21-61	21-32	21-21	21-20	21-39	21-68	21-54	21-87	21-71	22-34	21-47	21-59	21-37	21-67	21-37	21-51	21-56	21-52	21-55	21-61	21-47
Java Ratio ..	80-71	78-75	78-85	81-40	78-55	77-63	77-17	83-10	77-28	73-96	75-56	78-70	79-14	78-67	78-12	76-06	76-94	77-63	78-21	78-13	79-28
Milling																					
Tons Cane/Hour ..	156-89	29-91	61-24	172-03	39-48	37-65	25-77	29-66	22-65	13-87	52-72	62-52	40-54	36-76	26-12	34-77	46-30	74-88	16-68	25-19	56-23
Tons Fibre/Hour ..	21-84	4-03	9-21	22-45	9-35	5-29	3-74	3-44	3-43	2-36	8-00	8-78	5-76	5-14	3-70	4-49	6-40	11-69	2-22	3-36	7-89
Imbibition % Cane ..	17-79	21-20	16-29	22-43	20-17	19-99	19-35	19-08	24-20	17-05	15-04	21-69	20-23	24-08	19-24	20-39	13-52	22-87	12-97	17-48	19-59
Imbibition % Fibre ..	127-71	157-15	108-25	171-91	132-43	149-14	133-41	164-11	159-59	100-23	99-11	154-38	142-45	172-35	135-85	155-74	97-85	146-46	97-41	130-95	139-59
Pol Extraction ..	95-37	95-70	94-63	94-90	93-90	95-67	94-07	93-55	95-21	94-32	94-34	93-48	94-36	94-05	94-19	95-38	93-39	92-65	93-24	91-53	94-47
Reduced Pol Extraction ..	95-91	96-06	95-67	95-15	95-01	95-29	94-57	94-80	95-86	91-64	95-48	94-30	95-13	94-77	94-97	95-62	94-11	94-33	93-72	92-15	94-88
Bagasse % Cane ..	29-63	25-92	27-97	26-59	30-83	26-23	29-36	28-69	23-27	29-18	29-00	28-25	27-77	28-06	27-02	24-81	28-41	32-94	26-06	27-48	29-30
Absolute Juice Lost % Fibre ..	28-61	27-58	30-32	33-98	33-95	32-96	38-00	36-43	28-99	40-79	31-65	39-88	34-08	36-64	35-19	30-67	41-22	39-70	43-99	54-93	35-86
Time Grinding % Gross Grind- ing Time ..	83-37	78-71	75-98	80-90	81-82	78-15	73-00	89-01	81-18	—	76-49	77-57	82-56	76-97	79-49	69-32	76-59	83-10	63-00	77-49	78-63
Purity Drop																					
First Expresed—Mixed ..	1-60	1-94	2-12	1-33	1-98	2-28	2-06	1-80	1-92	2-44	1-88	1-75	1-47	2-51	1-83	2-07	2-27	2-05	2-71	1-48	1-78
First Expresed—Last Exp. ..	9-15	11-71	12-91	9-64	8-83	8-10	6-52	8-59	11-18	7-87	9-98	7-73	7-39	7-51	7-54	9-37	9-45	6-90	6-32	8-33	—
Boiling House																					
Tons Brix/Hour ..	22-57	4-16	7-94	23-28	8-68	5-57	5-18	4-50	3-35	1-72	6-73	8-67	5-59	5-20	3-42	4-69	6-00	10-26	2-13	3-10	7-73
Tons 98° Sugar/Hour ..	16-53	3-20	6-13	17-92	6-48	4-28	2-65	3-77	2-52	1-23	4-92	6-76	4-41	4-03	2-74	3-60	4-59	7-94	1-57	2-43	5-90
Filter Cake % Cane ..	3-41	1-54	1-44	2-43	2-44	2-86	1-50	1-74	1-08	0-92	3-08	1-16	2-50	1-15	2-42	1-62	1-43	2-66	1-11	1-16	2-29
Gals. Final Molasses at 58° Brix/ Ton 98° Sugar ..	60-07	48-08	51-11	48-14	51-69	46-59	49-01	29-05	50-29	—	61-24	46-62	44-44	44-07	42-78	49-13	57-43	43-33	56-56	47-08	50-50
Efficiency (W.C.) ..	96-99	98-03	99-33	98-99	97-67	97-70	96-55	96-86	95-64	92-19	98-36	97-85	98-75	98-83	97-16	95-71	97-13	96-17	98-59	97-76	97-85
Purity Rise: Mixed—Syrup ..	0-15	1-14	1-60	1-12	1-30	0-22	1-67	0-86	0-84	1-42	1-55	1-45	1-03	1-50	1-60	1-23	0-61	1-97	0-70	0-17	—
Pol Balance																					
% in Sugars ..	83-45	86-76	85-68	86-20	83-12	85-52	82-47	87-14	83-90	76-85	83-24	84-11	85-77	83-81	83-06	84-12	83-02	82-21	82-74	82-35	84-33
% in Molasses ..	10-41	7-86	8-17	7-40	8-39	8-07	10-24	8-09	9-36	13-45	9-46	7-50	7-18	6-65	6-56	5-56	8-42	8-14	8-62	7-07	8-23
% in Filter Cake ..	0-46	0-59	0-49	0-24	0-38	0-54	0-27	0-35	0-29	1-28	0-63	0-27	0-42	0-27	0-62	0-22	0-36	0-37	0-54	0-50	0-39
% in Bagasse ..	4-63	4-30	5-37	5-10	6-09	4-33	5-93	4-79	5-18	8-42	5-66	6-52	5-64	5-97	5-81	4-63	6-61	7-35	6-76	8-47	5-53
% Undetermined ..	1-05	1-49	0-29	1-06	2-02	1-54	1-12	2-25	1-27	—	1-02	1-60	0-99	3-30	1-95	1-59	1-56	1-93	1-34	1-61	1-52

NOTE.—Green Park Pol Balance: Pol "unaccounted for" included in "lost in molasses."
Appleton: Pol sent to distillery—3-88% Pol in Cane.

TABLE VI
NON-FACTORY STOPPAGES AND TIME GRINDING % GROSS GRINDING TIME

Factory	Field stoppages	Premeditated	Labour	Week-end	Nett grinding time	Time grinding
Monymusk	3.28	5.66	—	4.28	86.78	83.97
Richmond/Llandovery ..	1.83	0.34	—	10.47	87.36	78.71
Jamaica Sugar Estates ..	9.10	2.69	—	9.15	79.06	75.98
Frome	0.97	3.70	—	3.26	92.07	90.90
New Yarmouth	8.66	0.94	0.29	5.85	84.26	81.82
Caymanas	0.28	3.44	—	8.54	87.74	78.15
Innswood	1.61	6.00	—	7.72	84.67	73.00
Barnett	0.49	0.67	—	7.28	91.56	80.59
Worthy Park	0.03	1.09	—	4.71	94.17	89.01
Rose Hall	0.86	2.45	—	11.00	85.69	81.18
Green Park	—	43.07	—	4.38	52.55	34.67
Gray's Inn Central	4.92	0.97	0.05	12.01	82.05	76.49
Sevens	1.48	1.04	—	7.32	90.16	77.57
United Estates	0.59	4.36	1.15	4.87	89.03	82.56
Serge Island	3.76	3.75	—	3.87	88.62	76.97
Vale Royal	1.85	1.33	—	9.42	87.40	79.49
Appleton	1.28	0.86	12.97	9.47	75.42	69.32
Hampden	3.42	1.76	—	6.05	88.77	76.59
Bernard Lodge	5.20	3.92	—	4.16	86.72	83.10
Holland	10.62	5.25	—	6.05	78.08	63.00
Long Pond	6.23	1.71	—	9.35	82.71	77.49
Island Averages	3.05	4.12	0.92	7.02	84.89	77.17

NOTE.—Gross Grinding Time = Interval between commencement and termination of milling.
Nett Grinding Time = Possible Grinding Time.
Time Grinding = Actual Grinding Time.

TABLE VII
FACTORY STOPPAGES AND TIME GRINDING % NETT GRINDING TIME

	Machinery	Chokes	Juice room	Steam	Washing	Other reasons	Time grinding
Monymusk	2.99	0.24	—	—	—	—	96.77
Richmond/Llandovery ..	4.17	1.00	3.47	0.81	—	0.45	90.10
Jamaica Sugar Estates ..	2.74	0.05	—	—	—	1.10	96.11
Frome	0.71	0.13	—	0.12	0.04	0.27	98.73
New Yarmouth	2.66	0.03	—	0.04	—	0.16	97.11
Caymanas	6.77	0.46	2.54	0.25	—	0.90	89.08
Innswood	6.71	0.16	3.51	2.28	0.11	1.01	86.22
Barnett	8.89	0.56	0.41	0.98	0.53	0.62	88.01
Worthy Park	3.66	—	0.20	1.06	—	0.55	94.53
Rose Hall	3.96	0.42	0.49	0.17	—	0.22	94.74
Green Park	25.23	2.09	0.85	5.57	—	0.29	65.97
Gray's Inn Central	3.30	0.56	1.91	0.14	—	0.87	93.22
Sevens	8.74	0.51	0.74	0.03	—	3.94	86.04
United Estates	2.93	0.87	0.53	0.92	—	2.01	92.74
Serge Island	8.37	—	0.97	0.77	—	3.03	86.86
Vale Royal	4.33	0.53	2.06	0.26	—	1.87	90.95
Appleton	5.74	0.35	1.14	0.25	—	0.61	91.91
Hampden	7.62	0.51	1.78	1.67	—	2.14	86.28
Bernard Lodge	3.52	—	0.11	—	0.29	0.25	95.83
Holland	15.69	0.56	1.09	1.50	—	0.46	80.70
Long Pond	3.97	0.15	1.01	1.12	—	0.07	93.68
Island Averages	5.82	0.38	1.08	0.74	0.05	1.03	90.90

SUMMARY

Time Grinding	62312.09	Hours
Factory Stoppages	6234.19	= 7.72% Gross Grinding Time
Nett Grinding Time	68546.28	
Non-Factory Stoppages	12202.59	= 15.11% Gross Grinding Time
Gross Grinding Time	80749.27	

DISTILLERY DATA 1954 CROP

TABLE I

DISTILLERY CAPACITIES

	Mony-musk	Richmond/ Llan-doverdy	Jamaica Sugar Estates	Frome	New Year- mouth	Cay- manas	Inns- wood	Bar- nett	Worthy Park	Rose Hall	Green Park	Gray's Central	Sevens	United Estates	Serge Island	Vale Royal	Apple- ton	Hamp- den	Bar- nard Lodge	Hol- land	Long Pond	Totals and Averages
Fermentation	No. of Vats	43	10	43	37	15	30	17	10	13	21	9	21	15	16	20		56	44	18	59	527
	Total Capacity gal.	382,000	48,000	171,800	61,500	75,000	71,943	36,000	20,000	39,000	31,500	90,000	35,646	42,600	56,000	34,250		98,000	132,000	16,200	78,000	1,694,319
	Dunder Boxes No. of	4	8	7	5	2	4	10	5	12	5	—	5	4	—	6		5	3	3	3	12
	Total Capacity gal.	12,000	16,000	19,600	5,500	42,400	10,000	10,000	10,000	9,000	14,400	10,000	—	8,000	—	37,500	8,800		10,000	36,000	2,500	4,000	338,533
Cooling Surface sq. ft.		708	150	—	—	—	—	—	—	—	—	—	957	—	—	—		—	—	—	—	1,615
Distillation	No. 1 Wash pre-heater Capacity	2,900	1,500	3,800	4,000	3,000	—	Tubular	1,500	—	—	Cont. 330	—	—	—	850		—	3,000	—	—	19,850
	Capacity	135	831	166	—	100	—	—	—	—	—	—	—	—	—	40		—	250	—	—	1,852
		2,200	1,600	—	—	—	—	—	—	—	—	—	—	—	—	—		—	—	—	—	3,700
		135	885	—	—	—	—	—	—	—	—	—	—	—	—	—		—	—	—	—	720
Still No. 1	Loading Capacity gal.	2,000	1,500	2,000	1,500	1,500	2,500	1,800	1,300	1,500	—	1,100	1,780	1,237	1,500	1,500		2,000	1,380	1,000	1,200	29,997
	L.W. retort charge sq. ft. H.S.	135	180	104	150	105	300	200	65	100	—	—	188	98	200	80		250	112	120	120	1,609
	L.W. retort charge gal.	250	350	150	180	175	300	220	150	180	—	—	230	140	175	100		250	168	120	120	3,438
	H.W. retort charge sq. ft. H.S.	200	150	240	150	150	250	180	120	150	—	130	190	120	140	64		200	140	100	100	2,592
Condenser sq. ft. H.S.	—	2,660	766	—	—	—	—	470	—	—	—	—	365	752	220	—		—	—	—	—	5,223
	sq. ft. C.S.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		—	—	—	—	—
Still No. 2	Loading Capacity gal.	2,000	1,500	2,000	1,500	1,500	—	—	—	1,500	—	1,200	1,780	1,237	3,500	1,500		1,500	1,380	—	800	25,397
	L.W. retort charge sq. ft. H.S.	135	180	120	150	105	—	—	—	150	—	—	136	98	98	80		200	112	—	—	1,233
	L.W. retort charge gal.	250	350	240	180	175	—	—	—	180	—	—	230	140	350	100		200	168	—	—	1,233
	H.W. retort charge sq. ft. H.S.	200	150	220	150	150	—	—	—	150	—	135	190	120	280	64		150	140	—	80	2,419
Condenser sq. ft. H.S.	—	1,916	766	—	—	—	—	—	—	—	—	—	351	752	185	—		—	—	—	—	3,970
	sq. ft. C.S.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		—	—	—	—	—
Still No. 3	Loading Capacity gal.	2,000	—	1,800	1,200	—	—	—	—	—	—	—	—	—	—	—		1,500	1,380	—	—	10,380
	L.W. retort charge sq. ft. H.S.	135	—	86	115	—	—	—	—	—	—	—	—	—	—	—		200	112	—	—	523
	L.W. retort charge gal.	250	—	240	140	—	—	—	—	—	—	—	—	—	—	—		200	168	—	—	1,233
	H.W. retort charge sq. ft. H.S.	200	—	220	120	—	—	—	—	—	—	—	—	—	—	—		150	140	—	—	1,070
Condenser sq. ft. H.S.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		—	—	—	—	766
	sq. ft. C.S.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		—	—	—	—	—
Still No. 4	Loading Capacity gal.	2,000	—	1,800	1,600	—	—	—	—	—	—	—	—	—	—	—		1,000	1,000	—	—	7,800
	L.W. retort charge sq. ft. H.S.	135	—	88	150	—	—	—	—	—	—	—	—	—	—	—		150	125	—	—	498
	L.W. retort charge gal.	250	—	240	180	—	—	—	—	—	—	—	—	—	—	—		80	180	—	—	1,000
	H.W. retort charge sq. ft. H.S.	200	—	220	150	—	—	—	—	—	—	—	—	—	—	—		—	150	—	—	—
Condenser sq. ft. H.S.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		—	—	—	—	—
	sq. ft. C.S.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		—	—	—	—	—
Still No. 5	Loading Capacity gal.	—	—	2,000	—	—	—	—	—	—	—	—	—	—	—	—		—	2,000	—	—	4,000
	L.W. retort charge sq. ft. H.S.	—	—	120	—	—	—	—	—	—	—	—	—	—	—	—		—	150	—	—	270
	L.W. retort charge gal.	—	—	240	—	—	—	—	—	—	—	—	—	—	—	—		—	250	—	—	490
	H.W. retort charge sq. ft. H.S.	—	—	220	—	—	—	—	—	—	—	—	—	—	—	—		—	200	—	—	420
Condenser sq. ft. H.S.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		—	—	—	—	—
	sq. ft. C.S.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		—	—	—	—	—
Still No. 6	Loading Capacity gal.	—	—	2,000	—	—	—	—	—	—	—	—	—	—	—	—		—	—	—	—	2,000
	L.W. retort charge sq. ft. H.S.	—	—	120	—	—	—	—	—	—	—	—	—	—	—	—		—	—	—	—	130
	L.W. retort charge gal.	—	—	240	—	—	—	—	—	—	—	—	—	—	—	—		—	—	—	—	240
	H.W. retort charge sq. ft. H.S.	—	—	220	—	—	—	—	—	—	—	—	—	—	—	—		—	—	—	—	220
Condenser sq. ft. H.S.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		—	—	—	—	—
	sq. ft. C.S.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		—	—	—	—	—
Continuous Still	No. of columns	8	—	—	2	1	2	—	—	—	—	1	—	—	—	—		—	—	—	—	8
Wash/24 hours	gal.	48,000	—	5,000	—	40,000	25,000	—	—	—	—	40,000	—	—	—	—		—	—	—	—	188,000

TABLE II
DISTILLERY QUANTITIES

	Monymusk	Richmond/ Llandover	Frome	New Yarmouth	Cay- manas	Innswood	Worthy Park	Rose Hall	Gray's Inn Central	United Estates	Serge Island	Vale Royal	Hampton	Bernard Lodge	Long Fond	Holland
Cane Juice Used	tons															
Total Sugars as R.S.	593 124,000 gals. lbs.	— — — —	16 3,300 4,614	— — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —	70 14,607	1,242 261,893	6 1,403 1,957	2,593 550,080 768,880	— — —
Molasses Used	tons															
Equiv. 88° Brix	1,740 967,799 284,282 2,220,177 2,422,336 gals. lbs.	502 46,431 45,372 381,091 381,091	1,759 271,160 283,904 2,454,582 2,455,206	580 87,160 91,905 701,189 701,189	1,470 215,777 215,777 — —	1,186 1,186 172,694 — 1,292,863	848 125,961 127,421 — —	360 53,142 53,076 411,734 411,734	1,914 169,246 173,696 1,523,376 1,523,376	259 38,425 38,532 315,679 315,679	909 — 138,814 1,088,907 1,088,907	307 — 50,384 — 436,583	2,472 381,611 375,930 — —	2,509 526,335 555,637 4,784,783 4,786,750	900 141,552 138,577 1,170,366 1,385,246	819 53,677 32,954 — —
Wash: Set Used	gals. gals.	— —	352,500 —	468,100 —	1,441,500 —	1,192,706 —	580,000 —	327,000 —	1,545,315 —	246,500 —	731,600 —	322,500 —	— —	— —	1,992,900 —	220,500 —
Rum Distilled	gals.															
Bulk	92,237 128,394 20,157 gals.	16,233 22,664 15,365	105,596 147,833 109,919	29,082 40,716 29,806	72,097 100,956 70,726	44,009 66,648 47,652	27,754 38,638 26,622	15,245 17,538 14,922	— — —	13,249 18,471 13,801	55,866 82,332 36,292	— — —	95,901 184,111 82,192	181,368 204,843 178,960	72,488 105,548 75,499	9,696 15,548 9,267
Alcohol as Distilled	gals.															
Bulk	— — — gals.	— — —	— — —	— — —	— — —	— — —	— — —	— — —	47,673 — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —
As Packaged Bulk	gals.															
As Distilled Proof	— — — gals.	— — —	— — —	— — —	— — —	— — —	— — —	— — —	80,008 — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —
Absolute Alcohol	gals.															
Anhydrous Alcohol	— — — gals.	— — —	— — —	— — —	— — —	— — —	— — —	— — —	45,654 — —	— — —	— — —	— — —	— — —	— — —	— — —	— — —

TABLE III
DISTILLERY ANALYTICAL AND CONTROL DATA

	Monymusk	Frome	New Yarmouth	Innswood	Rose Hall	Gray's Inn Central	United Estates	Serge Island	Bernard Lodge	Long Pond
Cane Juice										
Total Sugars as R.S. %	15.33	13.23	—	—	—	—	—	—	9.79	13.94
Brix	16.57	14.07	—	—	—	—	—	—	11.00	13.97
Molasses										
Total Sugars as R.S. %	56.97	80.92	53.97	48.67	54.60	61.02	55.96	53.25	60.96	56.80
Brix	94.37	90.66	91.39	83.94	89.40	89.63	88.39	84.61	91.50	86.60
Dunder										
Brix	16.88	12.12	14.87	9.74	14.68	—	16.39	12.94	13.71	13.31
% Acidity (as Acetic)	1.98	2.03	3.90	1.04	1.23	—	1.47	1.47	1.38	2.04
pH	—	—	—	—	—	—	—	—	—	—
Live Wash										
Total Sugars as R.S. %	19.35	17.86	18.11	17.14	21.62	16.05	17.96	17.70	17.72	20.57
Brix	12.83	12.23	10.96	8.67	10.80	11.62	10.68	9.95	12.06	13.47
% Acidity (as Acetic)	1.98	0.81	—	0.58	0.52	—	0.34	0.41	0.36	1.00
pH	—	—	4.90	4.50	—	—	—	—	—	—
Dead Wash										
Brix	12.73	7.09	8.31	8.97	10.48	6.24	8.78	8.16	7.76	11.39
Total Sugars as R.S. %	0.88	0.91	1.15	1.27	0.86	0.92	—	0.81	0.99	1.13
% Acidity (as Acetic)	1.78	1.42	—	1.27	1.08	—	0.74	1.23	1.07	1.59
pH	—	—	3.91	—	—	—	—	—	—	—
% Proof Spirit	8.16	10.75	9.52	7.30	7.28	6.33	8.55	7.55	8.71	9.09
Rum										
Overproof	—	40.00	40.00	52.17	—	67.83	49.00	48.00	48.00	48.00
Fermentation										
Attenuation %Brix	6.63	10.77	9.80	8.17	11.14	9.81	9.18	9.54	9.96	9.28
% Conversion	93.14	92.66	89.51	86.35	92.04	92.08	—	91.86	91.79	90.53
Lbs. R.S./gal. Abs. Alc. in Wash ..	31.97	21.40	27.39	30.34	34.35	32.22	26.24	34.65	26.97	28.91
Distillation										
Gals. Abs. Alc. in Dist./gal. Abs. Alc. in Wash ..	0.97	0.87	0.91	0.89	0.87	0.97	0.94	0.95	0.85	0.91
Overall										
Lbs. R.S./gal. Abs. Alc. in Dist. ..	33.08	29.15	30.18	33.79	39.54	33.37	28.03	36.45	31.25	31.70
Recovery % Theoretical	46.49	52.76	50.96	45.52	38.90	46.09	54.89	43.19	49.52	48.11
Lbs. R.S./gal. Proof Alc. in Dist. ..	18.87	16.64	17.49	19.31	22.50	19.04	13.39	26.33	19.82	18.09
Gals. Mol. at 88° Brix/gal. Proof Alc. ..	2.21	1.91	2.26	2.98	2.80	2.17	1.99	2.66	2.07	1.93*

* Note.—High proportion of cane juice used by Long Pond.

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